

**Basel II/III: Liquidity Regulation and Supervision in the Banking Sector**  
**Case study: Liquidity Position of the Major Banks on the Finnish Market**

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<b>Supervisors</b> Mika Mustikainen, Tanja Vesala-Varttala <p>In the aftermath of the financial crisis that started in 2008, it was evident that there is a need to apply prophylactic measures in the banking sector in order to avoid crises of such an extent in the future. Consequently, the Basel II based legislation will be globally replaced with legislation implementing the Basel III rules. In the Basel III accord introduced in 2010, the topic of banks' liquidity and funding has attained special attention.</p> <p>The primary aim of this paper is to analyze the liquidity and funding positions as well as liquidity and funding risk management of three major banks operating on the Finnish market and to find out whether there are liquidity problems on the Finnish banking market.</p> <p>The secondary objective is to introduce the regulatory background that determines the quantitative and qualitative requirements for liquidity and funding as well as liquidity and funding risk management globally and in the European Union. Additionally, the paper presents the tasks and competencies of the supervisory authorities in the European Union.</p> <p>The paper introduces both the Basel II and the Basel III requirements. The Basel II rules are presented because the primary research material is based on the Basel II compliant legislation valid in 2013. The theoretical part of the study then focuses on the Basel III rules due to their future importance.</p> <p>In the European Union, the Basel III rules are implemented through the Capital Requirements Directive IV and the Capital Requirements Regulation. Generally, the Basel III rules mean the tightening of liquidity requirements for financial institutions. Newly, the quantitative liquidity and funding requirements - the Liquidity Coverage Ratio and the Net Stable Funding Ratio - are included in Pillar I. With regard to Pillar II, the Internal Capital and Liquidity Adequacy Assessment Process as well as the Supervisory Review and Evaluation Process have been enhanced. The Pillar III requirements are handled in the study to the necessary extent.</p> <p>The research of the sample companies was conducted by using qualitative methods and primary sources presenting the companies' last available annual data (2013). The findings indicate that the liquidity and funding positions of the sample companies are stable. However, the companies may face some challenges when the Basel III compliant legislation will enter into force. Due to the representativeness of the sample, it can be concluded that there are currently no liquidity problems on the Finnish banking market.</p>	
<b>Key words</b> Basel II, Basel III, CDR IV/CRR Package, European Banking Authority (EBA), Liquidity and Funding Risk, Liquidity Coverage Ratio (LCR), Net Stable Funding Ratio (NSFR)	

# Table of Contents

1	Introduction .....	1
1.1	Research Background.....	1
1.2	Purpose of the Study.....	2
1.3	Research Objectives.....	2
1.4	Demarcation and Structure of the Study.....	3
1.5	Key Concepts and Definitions .....	3
2	Research Methods and Sources.....	6
3	Regulation and Supervision in the Financial Sector.....	7
3.1	Structure of the Global Financial System.....	7
3.2	Basel Committee on Banking Supervision.....	8
3.3	Roles of the Supervisory Authorities in the EU .....	9
3.3.1	European Banking Authority .....	10
3.3.2	Finnish Financial Supervisory Authority .....	10
4	Liquidity and Funding.....	11
4.1	Definition of Liquidity and Funding (Risks) .....	11
4.2	Liquidity and Solvency .....	12
5	Liquidity Regulation in the Basel II Accord .....	14
5.1	General.....	14
5.2	Pillar I: Minimum Capital Requirements.....	15
5.3	Pillar II: ICAAP and Supervisory Review Process .....	16
5.3.1	General.....	16
5.3.2	ICAAP.....	16
5.3.3	Management of Liquidity Risk: FIN-FSA Standard 4.4d .....	17
5.4	Pillar III: Market Discipline.....	18
6	Liquidity Regulation in the Basel III Accord .....	19
6.1	General.....	19
6.2	Implementation of the Basel III Rules in the EU and in Finland.....	19
6.2.1	The CRD IV/CRR Legislation Package.....	19
6.2.2	The CRD IV Directive and Its Implementation in Finland .....	20
6.2.3	Enhanced 3-Pillar Structure .....	21
6.2.4	Scope and Application of the New Liquidity Rules .....	22
6.3	Pillar I: Quantitative Liquidity Requirements.....	25
6.3.1	Liquidity Coverage Ratio.....	25
6.3.2	Net Stable Funding Ratio.....	32

6.3.3	Requirements for the Additional Monitoring Metrics.....	33
6.4	Pillar II: ICAAP, ILAAP and SREP .....	34
6.4.1	ICAAP and ILAAP.....	34
6.4.2	SREP .....	35
6.5	Pillar III: Transparency.....	37
6.6	Possible Challenges in Applying the Basel III Requirements .....	37
7	Case Companies .....	38
7.1	OP-Pohjola Group.....	39
7.2	Nordea Bank.....	40
7.3	Danske Bank.....	41
8	Liquidity Position of the Major Banks on the Finnish Market.....	42
8.1	OP-Pohjola Group.....	43
8.1.1	Liquidity Risk Management.....	43
8.1.2	Liquidity Position.....	45
8.2	Nordea Group .....	46
8.2.1	Liquidity Risk Management.....	46
8.2.2	Liquidity Position.....	48
8.3	Danske Bank Group .....	49
8.3.1	Liquidity Risk Management.....	49
8.3.2	Liquidity Position.....	51
8.4	Conclusion of Liquidity and Funding Position Analysis.....	53
9	Conclusion .....	54
9.1	Financial Regulation and Supervision.....	54
9.2	Liquidity and Funding on the Finnish Banking Market.....	55
9.3	Final Remarks and Future Prospects.....	58
	References.....	59
	Attachments.....	65
	Attachment 1. Cash Outflows Overview (LCR).....	65
	Attachment 2. Cash Inflows Overview (LCR).....	67
	Attachment 3. NSFR Overview .....	68

## Abbreviations

AMA	Advanced Measurement Approaches
ASF	Available Stable Funding
BCBS	Basel Committee on Banking Supervision
CIA	Credit Institution Act
CRD	Capital Requirements Directive
EBA	European Banking Authority
ECAI	External Credit Assessment Institution
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority
ESFS	European System of Financial Supervision
ESM	European Stability Mechanism
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
FIN-FSA	Finnish Financial Supervisory Authority
HQLA	High-Quality Liquid Assets
ICAAP	Internal Capital Adequacy Assessment Process
ILAAP	Internal Liquidity Adequacy Assessment Process
IRB	Internal Ratings-Based Approach
LCR	Liquidity Coverage Ratio
NBSF	Net Balance of Stable Funding
NSFR	Net Stable Funding Ratio
RMBS	Residential Mortgage Backed Securities
RSF	Required Stable Funding
SREP	Supervisory Review and Evaluation Process
SSM	Single Supervisory Mechanism

# 1 Introduction

This chapter presents the research background, scope, and objectives as well as the basic concepts and definitions essential for this study.

## 1.1 Research Background

Recently, there has been public professional discussion about a need for stricter regulation concerning the banking sector. The reason for the tightening of the conditions under which banking institutions can offer their services is the creation of prophylactic measures against new financial crises like the one that started in 2008. In spite of certain grade of global financial regulation (e.g. Basel I from 1988 and Basel II from 2004) the banks have enjoyed relative freedom as regards their possibility to use various financial instruments in their operations, for instance short selling or subprime mortgage derivatives. This situation has led to risky behaviour that has threatened the stability of the banking system and the economy first in the USA and later also globally during the financial crisis that started in 2008.

During the crisis, it has been proved that not the mere fulfilment of the capital adequacy requirements but also prudent liquidity risk management is essential for the proper functioning of the financial markets, especially during the periods of increased funding costs. (BCBS 2010, 1.)

The study focuses on the Basel III accord (the new global standard for i.a. the bank capital requirements) which is being implemented across the world. In the European Union, it has been implemented through the CRD (Capital Requirements Directive) IV/CRR (Capital Requirements Regulation) package. The package will have influence on about 8000 banks providing their services in Europe (European Commission 2011). Mainly, the liquidity rules included in the package are taken under scrutiny here.

In addition, this paper deals with the Basel II accord. Firstly, the legislation based on the Basel II accord has relevance as a comparative material for the presentation of the new Basel III based legislation. Secondly, the analysis of the liquidity position of the largest banks operating on the Finnish market is conducted by using sources from 2013 and they comply with the legislation based on the Basel II accord.

The paper focuses on the situation in the European Union and especially in the eurozone countries. However, it is relevant to shortly introduce the global financial regulatory and supervisory system in order to give a picture of the global context of the EU regulation.

Legislative changes in this area are constant and the new European regulation will enter into force gradually. This paper reflects the situation at the time of writing. It is expected that some current rules are rescinded and substituted. However, with regard to certain limits, the principle of maximal contemporaneity is followed.

## **1.2 Purpose of the Study**

The purpose of this study is not to follow the latest regulatory releases on the topic, but to introduce the general regulatory framework that is common for both the Basel II and the Basel III accords. The aim of the paper is to provide the reader with an overview on liquidity regulation development, financial supervision and theory on liquidity risk management. Additionally, the study presents the liquidity and funding positions of the major banks operating on the Finnish market.

## **1.3 Research Objectives**

The basic research question is what the liquidity and funding positions of the financial institutions providing banking services on the Finnish market are. An analysis of the liquidity position of the selected case companies makes it possible to determine whether there are liquidity problems on the Finnish banking market.

The primary objective of the research is to present the liquidity position of the major banks operating on the Finnish market. The case analysis is based on the liquidity position of three banks with the market share of about  $\frac{3}{4}$  (see Chapter 7). In addition, the management of liquidity and funding risks of the respective banks are taken under scrutiny.

The aim of the research is not to conduct a comparative analysis of the sample companies, but rather to find out whether there are problems with liquidity and funding in the companies, and thus, on the Finnish banking market. That is why the largest financial institutions representing together the majority of the Finnish market were selected.

The secondary objective of the paper (and at the same time the prerequisite for the primary research objective) is to elaborate the current and future regulation concerning the liquidity, the funding as well as the liquidity and funding risk management. The legal rules for banks in the EU are mainly based on the Basel II and Basel III accords implemented through the legislation packages consisting of the CRD directives and auxiliary rules. This paper mainly focuses on the global and the European legislation. The transposition of the directives and regulation into the national law or their national interpretation will be analyzed in this paper only to the extent necessary for conducting the analysis. In 2013, the rules based on the Basel II accord were valid and the CRD IV/CRR package (i.e. the Basel III based rules) was approved by the

EU parliament. To some extent, it is necessary to compare the valid and the partly approved but not yet fully implemented norms.

The rules issued by the banking supervisory authorities both at the EU (the European Banking Authority) and at the national (the Financial Supervisory Authorities) level are of detailed nature and complement the higher level framework regulation, i.e. the EU directive and the regulation (the Capital Requirements Directive and the Capital Requirements Regulation) as well as the national legislation (mainly acts concerning the financial sector). The aim is to present the responsibilities and the rights of the supervisory authorities and to certain extent their interpreting views.

Also, it is necessary to elaborate the theory on liquidity and funding risk management in order to get more comprehensive understanding of the research and the research results.

#### **1.4 Demarcation and Structure of the Study**

The theoretical part of the study (Chapters 3-6) presents background information important for the empirical research. It introduces the regulation and provides information on the supervision in the banking sector. In addition, it contains the basic theoretical framework concerning the liquidity and funding. As regards the regulation, the study focuses on its development and highlights the main differences between the Basel II and Basel III accords. The theoretical part concentrates on the secondary objective described above.

The documentary research on the liquidity and funding positions of the sample companies (the major banks operating on the Finnish market) and on their risk management is described and the results of the research are presented in the empirical part of the study (Chapters 2 & 7-8). This part concentrates on the primary objective mentioned above.

#### **1.5 Key Concepts and Definitions**

(Credit) Institution/Bank/Entity

The study concerns credit institutions. In Finland, the referred legislation as well as the liquidity regulation and guidelines concern, in addition to credit institutions, specific investment firms, fund management companies, holding companies of credit institutions and investment firms, central body of the amalgamation of deposit banks, Finnish branches of foreign credit institutions and investment firms (FIN-FSA 2010a, 5). Additionally, to certain extent, the rules apply to some institutions operating in the insurance sector (Article 3 of Directive 2013/36/EU). These other companies, however, are not within the scope of this research. For



the purpose of this study, the terms of credit institution, bank and entity refer to the credit institutions the above mentioned Finnish legislation concerns.

### Basel Committee on Banking Supervision

The Basel Committee on Banking Supervision (BCBS) is a global-scale standard setting body in the field of banking supervision and regulation. It was established in 1974 and the establishing of the Committee meant formalization of the discussions on supervision and stability of the banking sector lead by the members of the Bank for International Settlements (central banks' representatives, supervisory officials and other member organizations). Nowadays, the Committee has 27 members and a platform for cooperation with non-member institutions.

### European Banking Authority

The European Banking Authority is the supervisory authority for the banking sector in the European Union. To its main tasks belongs the creation of the European Single Rulebook for banking. The Authority participates in developing the internal market by harmonizing the banking supervision and regulation in the European Union. The Authority cooperates with the national supervisory authorities. It also has an advisory function.

### Finnish Financial Supervisory Authority

The Finnish Financial Supervisory Authority is responsible for the supervision of the Finnish banking and insurance markets contributing to their stability and confidence. The Authority is a part of the European System of Financial Supervision.

### Basel II

The Basel II Capital Framework was published by the BCBS in June 2004. In the Basel II accord, the BCBS reviews the previous rules from 1988 (Basel I). It sets the rules including capital requirements for the financial institutions taking into account various financial risks. The main progress of the Basel II lies in the higher risk sensitivity, and thus, in more precise calculation of the capital requirements for high-risk lending. The Basel II rules have been globally applied.

### Basel III

The Basel III accord was introduced by the BCBS in December 2010. The new rules tighten the capital requirements and introduce a global liquidity framework. The purpose of the new

accord is to reduce the possibility of banking crises in the future. The Basel III rules will be implemented globally.

### 3-Pillar Structure in the Basel II and the Basel III Accords

The Basel II and Basel III accords have a three-pillar structure. Under Pillar I, the calculation of the minimum capital requirements as a ratio of a bank's own capital and risk-weighted assets covers the market, operational and credit risks of it. The rules under Pillar II provide a background for the prudential supervisory surveillance and define the relationship and communication between an institution and the supervisory authority. Pillar III deals with the market discipline rules mainly concerning the institution's responsibility to disclose particular financial information to the markets in order to promote transparency and trust.

### CRD IV/CRR Package

The CRD IV/CRR package contains the core implementing measures through which the Basel III accord is applied in the European Union. The whole package consists of the Capital Requirements Directive IV (2013/36/EU) amending the previous capital requirements legislation, the Capital Requirements Regulation (575/2013/EU) and the set of auxiliary rules.

### Liquidity Coverage Ratio

The Liquidity Coverage Ratio is a standard for measuring the banks' liquidity position. It defines the minimum liquidity requirements for the banks. It has been introduced in the Basel III accord. The fulfilment of the minimum value of the ratio should ensure that the bank is able to cover its liquidity needs within the next 30 calendar days. The liquidity needs have to be covered by unencumbered, high-quality liquid assets which are quickly convertible into cash shall the need occur. The sufficiency of such assets is tested by checking whether the bank is able to survive a 30 day stress period during which the liquidity needs increase unexpectedly.

### Net Stable Funding Ratio

The Net Stable Funding Ratio is a standard for measuring the banks' funding position. It defines the minimum funding requirement for the banks. It was introduced in the Basel III accord. The aim of the ratio is to secure stable liquidity funding over a period of one year. The bank shall acquire and maintain a sufficient amount of funding which represents such equity and liabilities that are able to provide reliable funding over one year period under stress conditions.

## 2 Research Methods and Sources

The qualitative methods are applied in the study and only part of the results is presented quantitatively.

According to Eriksson and Kovalainen (5, 2011), the qualitative methods are justified in the research when prior information about the topic is rather modest.

As for the liquidity, there is not enough such data that could create a basis for a quantitative research. The nature of the data and the research does not make the use of the quantitative methods appropriate. Translation into numbers and graphics would be rather difficult and would not create any added value.

Additionally, the clarification of the research objectives requires descriptive approach and application of the qualitative methods is more suitable for that, or even inevitable. Eriksson and Kovalainen (5, 2011) also write that in cases where better understanding of the problem is needed the use of qualitative methods is more justified.

The challenge in the selection of suitable sources lies in their high grade of diversification. This concerns both the primary and the secondary data. Also, not all information is publicly disclosed. This study is based on public information only.

The primary sources used in the research comprise valid and draft legislation and other regulation (issued e.g. by the regulatory bodies and the supervisory authorities) as well as the financial statements and other reports issued by the case companies. The empirical part of the study is based on the case companies' own publications.

The secondary sources of information comprise interpretations and analyses drawn up e.g. by consulting companies as well as several professional studies on the topic.

The theoretical background of the research has mainly been drawn up with help of the regulation and the empirical research has been conducted by using the sample companies' publications.

### 3 Regulation and Supervision in the Financial Sector

This chapter deals with the global financial system and the supervision in the financial sector. The focus is on the situation in the European Union.

#### 3.1 Structure of the Global Financial System

The financial system is divided into different sectors which are banking, securities markets and insurance. In addition, payment and settlement system, stock exchanges, credit rating, prevention of money laundering, reinsurance and auditing as well as accounting standards are part of the system. Various fora and organizations deal with the particular sectors executing their regulatory and supervisory tasks. The most important of these are the G7, followed by the OECD, the WTO, the IMF, the World Bank and the Financial Stability Forum<sup>1</sup>. The Bank for International Settlements and the Basel Committee on Banking Supervision are the most important bodies for the banking sector. (Davies & Green 2008, 32-109, see especially 33.)

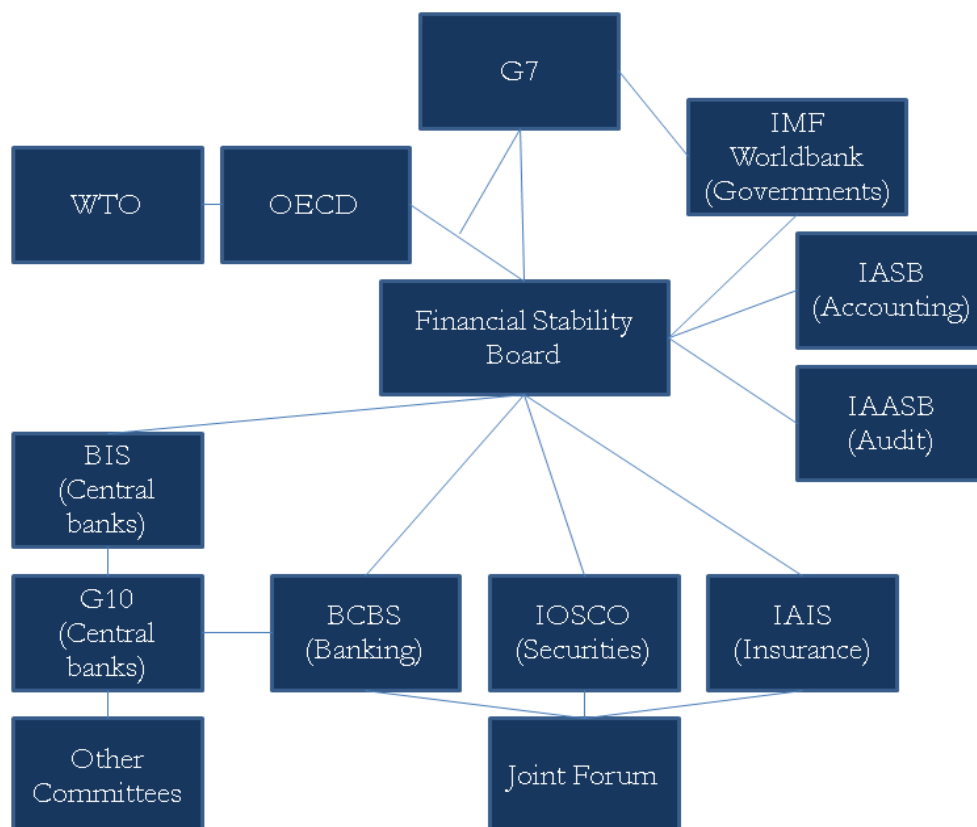


Figure 1. Structure of the Global Financial System (Regulator's view) (Davies & Green 2008, 33; simplified and modified.)

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<sup>1</sup> Since 2009 the Financial Stability Board. (Financial Stability Board s.a.)

Explanatory notes to the Figure 1:

BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
IAASB	International Auditing and Assurance Standards Board
IAIS	International Association of Insurance Supervisors
IASB	International Accounting Standards Board
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
OECD	Organization for Economic Cooperation and Development
WTO	World Trade Organization

### **3.2 Basel Committee on Banking Supervision**

Since 1930, when the Bank for International Settlements (BIS) was established, continual discussions on international financial stability have been led by the central banks' representatives, the supervisory officials and the other member organizations. One of the most important topics has been the supervision and stability of the banks operating internationally. After the World War II, the problems with respect to the international currency markets, the banking markets and especially the collapse of the Bankhaus Herstatt<sup>2</sup> led to formalization of these discussions in the 1970s. (Davies & Green 2008, 32-34.)

Mostly due to the Herstatt case, it was clear that there was a need for more effective supervision in the banking sector. In 1974, the Basel Committee on Banking Regulations and Supervisory Practices (later renamed the Basel Committee on Banking Supervision) was established by the central bank governors of the G10 countries within the Bank for International Settlements. (Davies & Green 2008, 32-34.)

Nowadays, the Committee has 27 members across the world. Additionally, it has a platform for cooperation with non-member institutions. The Committee reports to a joint committee of the central bank governors and to the heads of the supervision from its member states. Over the years, it has developed into a global standard setting body in the field of banking supervision and regulation. (BCBS 2013.)

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<sup>2</sup> The executives of the Bankhaus Herstatt underestimated the foreign currency risks and failed to estimate the development of the Dollar exchange rates. The collapse of the Bretton Woods System in 1973 when the fixed foreign exchange rates changed to floating rates gave new opportunities to make profit in the foreign exchange trade. However, at the same time the risks increased tremendously. (BCBS 2004, 4-6.)

The actions conducted by the executives of Herstatt were later found criminal and the originators were convicted. (The New York Times 1983.)

There is a connection between the BCBS and the bodies having regulatory and supervisory roles with respect to the banking sector in the European Union: the European Banking Authority, the European Central Bank and the European Commission have an observer status in the Committee. In the European Union, the regulation concerning credit institutions and investment firms is very much in line with the standards of the BCBS.

### **3.3 Roles of the Supervisory Authorities in the EU**

As mentioned above, the role of the supervisory authorities was seen to need strengthening. The supervisory tasks in the banking sector at the European level are conducted by the European Banking Authority (EBA) as a part of the European System of Financial Supervision (ESFS). The ESFS consists of the European Securities and Markets Authority (ESMA), the European Banking Authority and the European Insurance and Occupational Pensions Authority (EIOPA). In addition, the European Systemic Risk Board (ESRB) and the Joint Committee of the European Supervisory Authorities as well as the national supervisory authorities are part of the ESFS.

As of November 2014, the European Central Bank (ECB) will conduct (focusing mainly on the eurozone) some supervisory tasks in the banking sector within the Single Supervisory Mechanism for banks (SSM). The SSM is one of the main prerequisites for the creation of the European banking union which is supposed to enable the correct functioning of the European Stability Mechanism (ESM)<sup>3</sup>. The main responsibility of the ECB will be taking care of the overall functioning of the SSM. (Council of the European Union 2013.)

The ECB will be responsible for the supervision of the credit institutions operating in the eurozone with (a) total assets exceeding EUR 30 Billion or (b) exceeding 20 % of the GDP of the particular member state, except if the total assets do not exceed EUR 5 Billion. (Council Regulation (Proposal) 2013, 2:6.4.)

In Finland, the supervisory tasks are conducted by the Finnish Supervisory Authority. The Finnish Supervisory Authority is obliged to cooperate with the above mentioned European authorities as well as with the other member states' FSAs in order to ensure the effectiveness of the European supervision.

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<sup>3</sup> The ESM will enable direct recapitalization of the banks which are close to failure. The member states' treasuries (tax payers) will not need to participate in the rescue of these banks.

### **3.3.1 European Banking Authority**

The European Banking Authority (EBA) was founded in 2011. The main objective of the EBA is connected with the creation of the European Single Rulebook for banking. Thus, it continuously develops the internal market by contributing to the creation of the harmonized banking supervision and regulation in the European Union. In addition, the authority cooperates with and promotes cooperation among the national supervisory authorities as well as assesses risks and potential threats in the banking sector. (EBA s.a.)

The documents issued by the EBA may have either regulatory or non-regulatory nature. The documents comprise binding technical standards (approved by the European Commission), guidelines, recommendations, opinions as well as ad-hoc or regular reports. The binding technical standards particularize specific issues in the framework regulation, i.e. in the directives and the regulations. In comparison to the other documents issued by the EBA, the standards are of binding nature and applicable to the legislation of the member states. (EBA s.a. (a).)

Also, the EBA's advisory role is important. (EBA 2012, 3.)

### **3.3.2 Finnish Financial Supervisory Authority**

The Finnish Financial Supervisory Authority (FIN-FSA) carries out the supervisory tasks in the Finnish banking and insurance sector. As a part of the ESFS it closely cooperates with the EBA and the ECB.

The main objective of the FIN-FSA is to maintain the financial stability and the confidence in the Finnish financial markets. The authority ensures that the supervised entities fulfil the statutory capital requirements, do not take excessive risks, provide correct information of high quality on their state, services and products as well as operate in an appropriate manner. (FIN-FSA 2010, 2-5.)

In addition to the supervision, the FIN-FSA performs regulatory tasks. The documents issued by the authority may be either legally binding regulations or recommendatory guidelines and statements. The authority has an important role in preparation of both the domestic and the EU level financial market regulation. (FIN-FSA 2013.)

## 4 Liquidity and Funding

This chapter contains the basic concepts concerning the liquidity and funding (risks). Additionally, the distinction between the liquidity and the solvency is clarified.

### 4.1 Definition of Liquidity and Funding (Risks)

In the Basel III framework, the handling of the liquidity risk comprises the short- (up to 3 months), medium- (3-12 months) and long-term (over 1 year) periods (EBA 2013b, 6-7 & 9; see also the definition of the short-, medium- and long-term under Basel II in the Chapter 5.3.3 as well as time periods related to the LCR and the NSFR in the Chapters 6.3.1-6.3.2).

In the following paragraphs, several definitions concerning the liquidity and funding (risks) are clarified.

The EBA (EBA 2013b, 6) defines the liquidity risk as

”the risk that an institution cannot meet its financial obligations, such as payments and collateral needs, as they fall due in the short term and medium term, either at all or without incurring unacceptable losses. ”

The funding risk is defined as

”the risk that an institution cannot meet its financial obligations, such as payments and collateral needs, as they fall due in the medium to long term, either at all or without increasing funding costs unacceptably. Funding risk can also be seen as the risk that the business is not stably funded in the medium- and long-term. ” (EBA 2013b, 6.)

The BCBS (2008, 2) defines liquidity as

”the ability to fund increases in assets and meet obligations as they come due.”

A bank is exposed to the liquidity risk because it transforms liquid deposits (liabilities) to illiquid loans (assets). These are the key operations of the banks and the liquidity risk management’s role is to ensure their continuity. In addition, the liquidity position is related to stakeholders’ confidence: a bank having no confidence can face liquidity shortfalls (e.g. withdrawal of the deposits). (Armstrong & Caldwell 2008, 47.)

The main risks the banking sector is exposed to are credit risk, counterparty risk, market risk, operational risk and liquidity risk. The liquidity risk is considered to be a secondary risk because it usually occurs together with some of the above mentioned risks. It can appear on



both sides of the balance sheet. The liquidity position of a bank can quickly worsen due to a loss of reputation (endogenous trigger) or liquidity problems in the market (exogenous trigger) which can again lead to e.g. the withdrawal of the wholesale deposits. (Armstrong & Caldwell 2008, 48.)

According to Armstrong and Caldwell (2008, 48), the banks have three options for accessing cash in a short period of time:

- the selling or deeming of the unencumbered liquid assets;
- borrowing (from private sources, central banks) on a secured or unsecured basis;
- using cash from the operations.

As regards the stability of the long-term liquidity, banks can either sell less-liquid assets or acquire funding from the capital markets.

An interesting question is what the sufficient amount of liquidity is. In the financial world, a well known proverb says that "a lack of liquidity can kill a bank quickly, whereas too much liquidity can kill a bank slowly". According to Armstrong and Caldwell (2008, 48), the lost opportunity costs due to high reserves of liquid assets should be taken into account. On the other hand, a bank should hold sufficient liquidity reserves to cover both the probable low-severity risks and the less probable high-severity stress events. An institution's strategy and preparedness to take risks are the most important factors.

## **4.2 Liquidity and Solvency**

According to Danske Bank (2014b, 6),

"the solvency need is the total capital of that size, type and composition that is needed to cover the risks to which an institution is exposed. "

The liquidity and solvency of an institution are closely linked. According to Charles Goodhard (see Armstrong & Caldwell 2008, 47-48),

"liquidity and solvency are the heavenly twins of banking, frequently indistinguishable. An illiquid bank can rapidly become insolvent, and an insolvent bank illiquid. "

Armstrong and Caldwell (2008, 47-48) continue that a strong capital position of a bank does not exclude a possible liquidity problem, especially during the period of liquidity shortage on the markets.

According to Diamond and Dybvig (see Hong & Wu s.a., 8), the insolvency of an institution is defined on the basis of the ratio between its assets and liabilities and the liquidity position of an institution is derived from its ability to meet its financial obligations. Even when the insolvency is mostly the reason for the failure of a bank, the illiquidity can under certain conditions cause the failure of a solvent bank.

Financial statements often include solvency ratio as one of an institution's solvency metrics to prove its ability to meet the short- and long-term liabilities of it. The solvency ratio is calculated as  $\text{net income} + \text{depreciations} / \text{short-term liabilities} + \text{long-term liabilities}$ . Even though the ratio focuses on cash flows due to the fact that depreciations are not taken into account, it does not disclose the state of a company's liquidity and available funding.

In their research concerning the liquidity risk's role in banks' failures in the United States between 1985-2011, Hong and Wu (s.a., 1) focus on empirical data rather than on models based on accounting ratios. In order to create a model for predicting the failure of a bank they have analyzed systematic and idiosyncratic channels<sup>4</sup> of the liquidity risk contributing to the failure.

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<sup>4</sup> The systematic risk concerns every bank and is not dependent on the liquidity risk management of a bank. E.g. a significant liquidity problem on the markets hits every bank. As for the idiosyncratic channel, one of the essential features is the importance and quality of the liquidity risk management of an entity. A bank with well-developed liquidity risk management is less prone to liquidity problems. (Hong & Wu s.a., 2-3.)

## 5 Liquidity Regulation in the Basel II Accord

In this chapter, the history, the implementation as well as the main features of the Basel II accord are presented, and the focus is on the liquidity requirements.

### 5.1 General

In order to describe the Basel III accord it is necessary to deal with the previous framework. The Basel III accord is in many aspects based on the Basel II framework and the description of the basic principles of the Basel II is essential for a better understanding of the new framework. Also, at the moment of writing this paper the Basel III accord is not yet fully implemented. It is going to replace the old accord gradually.

The Basel II Capital Framework was published by the BCBS in June 2004. In the Basel II accord, the BCBS reviews the previous rules from 1988 (Basel I). Its main progress lies in the higher risk sensitivity, and thus, in more precise calculation of the capital requirements for lending. In comparison to the Basel I accord that covered the credit risk, also the market and the operational risks are covered in the calculation of the minimum capital requirement, that is, the ratio of the bank's own capital and risk-weighted assets (Pillar I). Additionally, the framework provides means for the prudential supervisory surveillance (Pillar II) and deals with the market discipline (Pillar III). (Dierick, Pires, Scheicher & Spitzer 2005, 7-10.)

When compared to the previous rules, the Basel II framework introduced new requirements and methodologies for assessing capital adequacy and managing various types of risks. However, according to the FIN-FSA (2006, 17-18), not all aspects of the credit, operational and market risks and other relevant risks typical for a particular supervised entity are included in the calculation of the minimum capital requirements under Pillar I. Due to this limitation, Pillar II (the supervisory review) is essential: the capital buffers in excess of the minimum regulatory requirements as well as the management techniques for managing prudential risks of the entity are part of it. The supervisory review process includes all risks the entity is exposed to meaning that the entity has to be able to analyze, manage and report the risks beyond the Pillar I requirements (about the Supervisory Review and Evaluation Process, see Chapter 5.3).

In the European Union, the Basel II accord was implemented via the Capital Requirements Directives 2006/48/EC and 2006/49/EC. (European Commission 2011.)

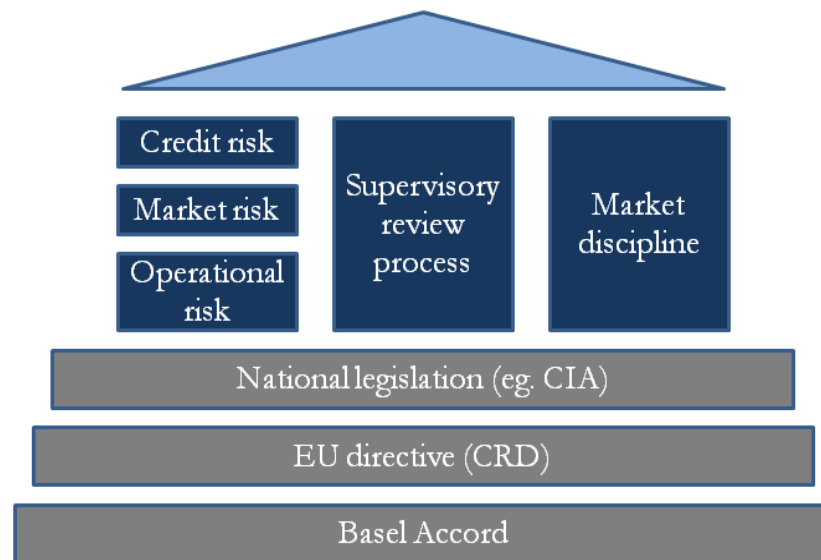


Figure 2. CRD Scheme (Danske Bank 2011; modified.)

The CRD scheme in the Figure 2 is basically valid also for the implementation of the Basel III accord (see Chapter 6.2.3, compare to Figure 3).

## 5.2 Pillar I: Minimum Capital Requirements

As mentioned above, the risks covered under Pillar I are the credit, market and operational risks. The Basel II framework provides the banks with certain options as regards methods for calculating the capital requirements for particular risks. (Dierick et al. 2005, 10.)

As for the credit risk, two methods and several approaches can be applied. Firstly, ratings given by the recognized rating agencies are used for defining the assets' risk weight in the standardized approach (a). Secondly, the internal ratings-based approach, i.e. the IRB (b), allows a bank to use its own internal assessment for some elements of the risk. The IRB approach requires, however, an approval of the supervisory authority. In addition, the rules for the credit risk deal with asset securitization (c) (the securitizing of own assets or the buying and holding of the tranches of securitizations) and credit risk mitigation (d) (e.g. collateral or guarantee). (Dierick et al. 2005, 10-17.)

Concerning the operational risk, two main approaches are available. According to the first option, the adjusted gross income is used as a basis for the calculation of the regulatory capital requirement for the operational risk. A supervisory factor is used as a multiplier for the variable. The required amount of the capital is the result of the multiplication (the basic and standardized indicator approaches). The second option is to use the advanced measurement approaches (AMA) according to which a bank has to develop its own internal methods and techniques for the assessment of its operational risk. The application of the AMA requires an approval of the supervisory authority. (Dierick et al. 2005, 17-18.)

According to Dierick et al. (2005, 11), approaches available for the market risk remain in comparison to the Basel I accord practically unchanged. The BCBS (2006, 162-163) defines two methodologies for the assessment of the required capital levels for the market risk under Pillar 1. Using the standardized method means that the interest rate, equity position, foreign exchange, commodities and price risk in options shall be measured. The alternative method sets out conditions under which a bank can use its own risk management models for the market risk assessment. The choice of a particular method is subject to a consultation with or an approval of the supervisory authority. The amount of the required regulatory capital is the sum of the charges derived from the first or the second calculation method, or from their mixture.

Thus, there are no quantitative requirements with respect to liquidity risk under Pillar I.

### **5.3 Pillar II: ICAAP and Supervisory Review Process**

#### **5.3.1 General**

Under Pillar II, a bank has to use its own risk management processes for assessing its capital adequacy concerning the particular risks. The supervisory authority's position is strengthened the aim of which is to provide more convergence in the field of financial supervision. The authority should assess the bank's own risk management processes and examine whether the bank's capital adequacy assessment complies with its particular risk profile and business strategy. The supervisor also ensures that the bank holds a sufficient amount of own capital to cover risks which are not included in Pillar I and to prevent the bank's capital level from falling below the required minimum levels. (Dierick et al. 2005, 18.)

According to the FIN-FSA (2013b), the sources of the Supervisory Review Process include the Internal Capital Adequacy Assessment Process report and the other reports of the supervised company as well as information received during supervisory controls. The Supervisory Review and Evaluation Process is described in connection with the Basel II accord (in this Chapter) and below in connection with the Basel III accord (see Chapter 6.4).

#### **5.3.2 ICAAP**

In the Internal Capital Adequacy Assessment Process (ICAAP) that is an integral part of Pillar II the supervised entity is obliged to conduct an assessment of the risks not included in Pillar I (in addition to the risks included or partly included in it). This should be done because the capital requirements under Pillar I do not necessarily give a comprehensive picture of the risks the entity is exposed to. In order to assess the overall capital requirements additional risks comprising among other things of the interest rate, concentration and liquidity risks as well as

the diversification of activities must be taken into account. The assessment of all material risks of the entity can lead to an increase in its capital requirements, i.e. the risks beyond the scope of Pillar I have to be covered with additional capital and/or effectively managed. (FIN-FSA 2006, 27-29; 32-37.)

According to the Basel II rules, in terms of liquidity, the entity has to manage its (a) liquidity risk and (b) structural financial risk. Liquidity risk (a) arises from a short-term liquidity insufficiency when short-term cash inflows are not in balance with (i.e. are below) short-term cash outflows. For monitoring and mitigating the liquidity risk, the entity has to develop and to conduct stress tests and to maintain a contingency plan. Stress tests examine various alternatives when the availability of liquidity on the market reduces (external factors), or, when the entity's net financial situation negatively changes (internal factors). Structural financial risk (b) is related to the availability of funding for the long-term lending. Structural financial risk arises from the market-based costs of the imbalance between deposits and long-term lending, i.e. when lending must be financed by some other financial sources than deposits. (FIN-FSA 2006, 36-37.)

The obligation to manage the risks (a) and (b) also means that the entity has to be able to assess its own risk management and the capital adequacy with respect to them, based on the ICAAP-principles.

### **5.3.3 Management of Liquidity Risk: FIN-FSA Standard 4.4d**

The FIN-FSA Standard 4.4d contains in detail the binding rules as well as the guidelines concerning the management of liquidity and liquidity risk, i.e. the Standard gives tools for liquidity risk management within Pillar II. The Standard also defines obligation of an entity to disclose information on its liquidity position and risk management to the management and to the FIN-FSA (FIN-FSA 2010a, 6). The Standard supplements the Finnish Credit Institution Act (CIA) no. 121/2007. According to the FIN-FSA (2013a, 21), the Standard will be updated due to the Basel III accord in 2014. The following paragraphs present the main contents of the Standard without making distinction between the rules of binding and recommendatory nature.

According to the FIN-FSA (2010a, 11-12 & 16), the entity shall elaborate a liquidity strategy to tackle both the short-term and long-term liquidity risk. Liquidity risk management is obligatory not only on the group level but also on the level of the individual legal units such as branches. Further, the entity shall take into account the importance of liquidity risk for each individual unit when considering centralization or decentralization of the liquidity risk management.

According to the FIN-FSA (2010a, 17-23), the entity shall identify, measure, mitigate and monitor the liquidity risk. Identification of the liquidity risk concerns both balance sheet and non-balance sheet exposures. A cash flow projection must be prepared for a period of primarily external stress. In addition, the foreign currency positions should continuously be monitored and possible shortages in liquidity anticipated. Several measurement methods should be applied for analyzing the balance sheet structure and revealing the weakening of the liquidity position. The so called early warning indicators such as rapid growth in receivables, concentration of receivables, repeated internal limit overruns and others are the indicators telling that the liquidity position of the entity may be weakening. Liquidity buffers and limits as well as other techniques should be used as tools for mitigating liquidity risk. In order to monitor the liquidity risk the entity should be able to calculate and to present to the management the liquidity position in all significant currencies on the consolidated, subsidiary and branch level. Also, the liquidity risk in intraday operations of the entity must be monitored and controlled.

It is necessary to constitute a liquidity buffer for unexpected cash outflows consisting of cash, highly liquid assets (for short-term funding needs) and other assets (for medium-term funding needs). The buffer shall be based on the results of the stress test where both the idiosyncratic and market conditions have changed negatively. When constituting the buffer, the entity should take into account the short-term (1-2 weeks) and medium-term (1-2 months) funding needs. Concerning long-term, i.e. the period of up to 1 year, the entity shall use also other methods than liquidity buffer to be prepared for the deficiency in liquidity, such as contingent funding sources, changes in operations or business model and setting up contingency plans. (FIN-FSA 2010a, 25-26.)

As for contingency arrangement (FIN-FSA 2010a, 29-33), the entity must regularly perform liquidity stress tests. The entity should also have a written contingency funding plan for exceptional liquidity situations.

#### **5.4 Pillar III: Market Discipline**

Pillar III deals with the disclosure of information on the bank's business lines, risk exposures and risk management. The banks need to provide both qualitative and quantitative information on these topics. With respect to the banking groups, consolidated information has to be provided. Information on the capital structure and capital adequacy is one of the most important issues. In addition, information on the credit, operational and market risks need to be provided separately. When using more developed internal assessment methods or internal models the bank should present some details of the procedures and techniques in use. (Dierick et al. 2005, 119-20.)

## 6 Liquidity Regulation in the Basel III Accord

The implementation process as well as the main features of the Basel III accord, mainly the liquidity requirements (especially the new quantitative requirements), are introduced in this chapter.

### 6.1 General

The original Basel III accord was introduced by the BCBS in December 2010. The main features of the Basel III rules are tighter capital requirements than in Basel II as well as the establishing of a global liquidity framework. The Purpose of the tightening of the capital requirements is to reduce the probability of a severe banking crisis in the future. (BIS 2010.)

In the European Union, the Basel III accord is implemented in the similar way as introduced in the Figure 2 (Chapter 5.1).

### 6.2 Implementation of the Basel III Rules in the EU and in Finland

#### 6.2.1 The CRD IV/CRR Legislation Package

As mentioned above, in the European Union, the Basel III accord is applied via the CRD IV/CRR package. The package consists of the Capital Requirements Directive 2013/36/EU and the Capital Requirements Regulation 575/2013/EU which were passed in July 2013 and will enter into force in 2014. In addition, the package comprises of a set of auxiliary rules of more technical and detailed nature. At the moment of writing this, the already passed parts of the package are the above mentioned framework directive (CRD IV) and the regulation (CRR) consisting of high level rules that need to be specified by the auxiliary rules that shall be enacted e.g. by the EBA.

The core liquidity risk related rules of the Directive and the Regulation are presented in the following chapters in order to give a picture of the general principles of liquidity regulation in the CRD IV/CRR package.<sup>5</sup>

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<sup>5</sup> In general, the CRD IV as a directive shall be transposed into the legislation of the member states. The CRR as a regulation is automatically part of the legislation of the member states. Additionally, according to Gatzert and Wesker (2011, 7-8), this complex banking regulation is in the EU implemented via the so called Lamfalussy approach in order to provide high-level harmonization and better consistency of the application. The Lamfalussy implementation process is a 4-level-process. The first level consists of the framework legislation passed by the European legislative bodies (in this case the CRD IV/CRR). The second level includes consultations held among the market participants (in case of the banking sector the EBA and the end users) and the implementation of the framework legislation. The third level takes into account the national supervision and the implementation of the level 1 and level 2 regulation. Finally, on the fourth level, the Commission ensures the consistent implementation of the regulation in the member states.



### **6.2.2 The CRD IV Directive and Its Implementation in Finland**

According to the Article 86 of the CRD IV Directive, the institutions should have robust strategies, policies, processes and systems for the identification, measurement, management and monitoring of liquidity risk over an appropriate set of time horizons, including intra-day, to ensure that the levels of liquidity buffers are adequate. These strategies, policies, processes and systems shall be proportionate to the complexity, risk profile, scope of operation of the institutions and risk tolerance set by the Board of Directors (the principle of proportionality).

Further, according to the above mentioned article, the institutions have to develop methodologies for the identification, measurement, management and monitoring of funding positions. Those methodologies shall include the current and projected material cash-flows in and arising from assets, liabilities, off-balance-sheet items, including contingent liabilities and the possible impact of reputational risk. The institutions also have to distinguish between pledged and un-encumbered assets that are available at all times, in particular during emergency situations as well as take into account the legal entity in which assets reside, the country where assets are legally recorded and their eligibility and shall monitor how assets can be mobilised in a timely manner.

In addition, the article 86 of the Directive stipulates that the institutions have to consider and regularly review different liquidity risk mitigation tools, including a system of limits and liquidity buffers in order to be able to withstand a range of different stress events and an adequately diversified funding structure and access to funding sources. The institutions also need to consider alternative scenarios on liquidity positions and on risk mitigation tools and review the assumptions underlying decisions concerning the funding position at least annually.

The article 86 of the Directive also stipulates that the institutions are obliged to consider the potential impact of institution-specific, market-wide and combined alternative scenarios and for this purpose different time periods and various stress conditions shall be considered. Furthermore, the institutions shall adjust their strategies, internal policies and limits on liquidity risk and develop effective contingency plans, taking into account the outcome of the above referred alternative scenarios.

Yet, according to the Directive, the institutions are expected to have in place liquidity recovery plans setting out adequate strategies and proper implementation measures in order to address possible liquidity shortfalls.

The Article 105 of the Directive provides the competent authorities with powers to impose specific liquidity requirements in specific cases. According to the Article 107(3) of the Direc-

tive, the EBA is entitled to develop guidelines for the Supervisory Review and Evaluation Process (SREP) which provides the supervisory authorities with a tool for assessing i.a. liquidity risk.

When reading these articles of the Directive it can well be seen that there is a need for further regulation stipulating how this very general, qualitative liquidity regulation should be applied in practice. The CRR contains rules of more concrete nature (also quantitative) and the auxiliary rules enacted, among others, by the EBA further specify the general principles.

The general requirements of the European Capital Requirements Directive concerning liquidity risk management for the entities operating in Finland are defined in the section 52 of the Finnish Credit Institution Act (CIA) no. 121/2007. However, at the time of writing this paper the CIA contains the rules of the CRD that is based on the Basel II framework.

The Government Proposal for the new Finnish Credit Institution Act (39/2014) that will reflect the CRD IV requirements was handled in the Finnish Parliament in June 2014 and the amended Act will enter into force later in 2014.<sup>6</sup> (Parliament of Finland 2014.)

The qualitative requirements of the Directive concerning liquidity will be transposed to the new Finnish Credit Institution Act, but there will be no quantitative liquidity requirements in the Act due to the fact that the quantitative requirements will be set through a Regulation that is directly applicable in Finland. (Government Proposal for the Finnish Credit Institution Act 39/2014, 33-34.)

### **6.2.3 Enhanced 3-Pillar Structure**

The 3-Pillar structure is maintained in the CRD IV/CRR package. In general, tighter capital adequacy requirements and new ways to elaborate some of the risks differentiate the forthcoming package from the Basel II accord. This also concerns the rules on liquidity and liquidity risk management. In the Basel II, the liquidity risk and its management are evaluated in the ICAAP under Pillar II. In the Basel III, the liquidity risk is taken into account not only in Pillar II, but in Pillar I as well. The FIN-FSA (2013a, 14-21) introduces the new liquidity and liquidity risk management requirements under Pillar I and Pillar II. Pillar I requirements involve the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR). Pillar II includes the other aspects of liquidity risk management.

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<sup>6</sup> According to the FIN-FSA (2014), the estimated validation time is August 2014.

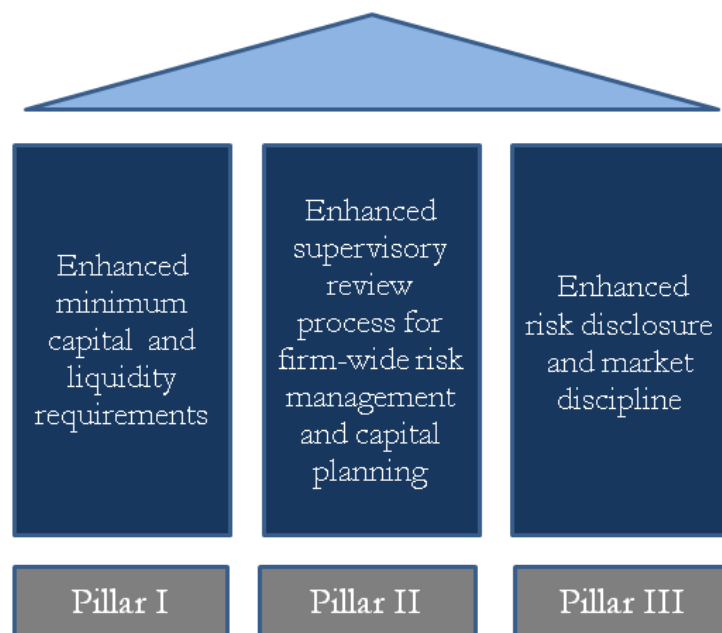


Figure 3. Tightened 3-Pillar Structure of the Basel III (Moody's 2013, 1; modified.)

With respect to Pillar I, the BCBS has developed two new standards for measuring the banks' liquidity position. The LCR enables to follow the levels of high-quality liquid assets which should be sufficient for covering a stress period lasting one month. The NSFR concentrates on the banks' stable funding over a time horizon of one year. The aim is to control the resilience of the maturity structure of assets and liabilities. Both standards define the regulatory minimum liquidity requirements for the banks. The LCR shall be applied as of January the 1st, 2015 and the NSFR as of January the 1st, 2018. (BCBS 2010, 1-3.)

With respect to liquidity risk management of the banks, in addition to the Pillar I requirements, the Pillar II liquidity risk management requirements have to be and the so called Sound Principles (Principles for Sound Liquidity Risk Management and Supervision)<sup>7</sup> may be taken into account. Thus, the above mentioned two Pillar I requirements shall be the main but not the only tools used when assessing the banks' liquidity position and risk management within the Basel III framework.

The Pillar III requirements are shortly described in the Chapter 6.5.

#### 6.2.4 Scope and Application of the New Liquidity Rules

As defined in the Article 460 of the Regulation (575/2013/EU), the European Commission should adopt a delegated act concerning implementation of the LCR before June the 30th,

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<sup>7</sup> BCBS 2008.

2014<sup>8</sup> and the liquidity coverage requirements shall enter into force gradually so that 60% shall be met in January 2015 and 100% on January the 1st, 2018. However, according to the BCBS (2013b, 2), the global deadline for meeting 100% of the LCR requirements has been postponed to January the 1st, 2019:

Table 1. Steps for Meeting the LCR Requirements (BCBS 2013b, 2.)

	January 2015	January 2016	January 2017	January 2018	January 2019
Minimum LCR	60%	70%	80%	90%	100%

Before adopting the delegated act which shall enter into force on the 1st of January 2015, the EBA should issue draft technical standards and/or reports concerning i.a. the definition of the high-quality liquid assets (HQLA), the LCR requirements' impact on the banks and the real economy as well as the currency definition for liquidity purposes. (FIN-FSA 2013a, 15.)<sup>9</sup>

In 2013, the BCBS issued a new paper on liquidity requirements<sup>10</sup>. In comparison with the original BCBS paper on International Framework for Liquidity Risk Measurement, Standards and Monitoring (BCBS 2010), the new paper which includes the finalized standard on the LCR does not deal with the NSFR. According to PwC (2013, 1), the BCBS will elaborate the NSFR and adjust the standard for this requirement in 2017 (see also the Regulation 575/2013/EU, Preamble paragraphs 111 and 112). However, in order to provide a more complete picture, it is useful to mention in this study, at least shortly, the NSFR standard defined in the original BCBS paper.

Table 2. Implementation Process of the Basel III Accord in the European Union, Situation in August 2013 (BCBS 2013a, 21-22.)

<b>Risk-based Capital</b>	<b>G-SIB / D-SIB requirements</b>	<b>Liquidity (LCR)</b>	<b>Leverage ratio</b>
The agreement between the European Parliament and the EU Council on the legislative texts implementing Basel III and further measures regarding sound corporate governance	Mandatory G-SIB and optional D-SIB buffers implemented by Article 131 of Directive No 2013/36 with date of application of 1 January 2016.	The LCR to be implemented by a delegated act to be adopted by the Commission before 30 June 2014 for application in 2015 (cf Article 460 Regulation No 575/2013).	Mandatory disclosure of leverage ratio from 1 January 2015 (cf Articles 451 and 521 of Regulation 575/2013).

<sup>8</sup> It seems that the introduction of the delegated act will be postponed to Autumn 2014. (Nordic FIs & Covered, 2014).

<sup>9</sup> Some of these Standards were already published. See Bibliography under EBA.

<sup>10</sup> See Bibliography, BCBS 2013b.

and remuneration structures published in the Official Journal 35 on 27 June 2013 with a date of application of 1 January 2014. The legislative texts are Directive (No 2013/36) and Regulation (No 575/2013). Where necessary, detailed technical standards will be prepared by the EBA and adopted by the Commission on a timely basis.			
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In the European Union, the LCR data shall be collected from the institutions on solo and consolidated level and from the foreign credit institutions' important branches monthly starting on the 31st of March 2014 and the NSFR data shall be collected quarterly starting also on the 31st of March 2014. (FIN-FSA 2013a, 16.)

The EBA (2013b, 8) shall issue the Implementing Technical Standard on Supervisory Reporting for Liquidity Coverage and Stable Funding. Based on the Standard, the supervisory authorities will get the information about the LCR and the NSFR in a unified format.

In addition to the LCR and NSFR, the Additional Monitoring Metrics with respect to liquidity risk shall be applied concerning the following areas: funding risk, concentration of funding by counterparty and product type, prices for various lengths of funding and roll-over of funding. In the EU, the data shall be collected monthly or quarterly. (FIN-FSA 2013a, 16; EBA 2012, 9-13.)

The EBA issued the Draft Implementing Technical Standards on Additional Liquidity Monitoring Metrics in December 2013. The Standards give the supervisory authority, in addition to the LCR and NSFR, a tool for monitoring the institutions' liquidity risks mentioned in the previous paragraph. The concentration of counterbalancing capacity by issuer/counterparty has been added to the metrics. When approved, the Standards shall be adopted as an EU Regulation and applied as of July the 1st, 2015. (EBA 2013.)

The LCR, the NSFR, the Additional Monitoring Metrics as well as the SREP (together with the ICAAP and the ILAAP) are more accurately described in the following chapters.

### 6.3 Pillar I: Quantitative Liquidity Requirements

#### 6.3.1 Liquidity Coverage Ratio

The minimum LCR value shall ensure that the bank is able to cover its liquidity needs within the next 30 calendar days. The liquidity needs will be covered by unencumbered, high-quality liquid assets (HQLA) which are quickly convertible into cash shall the need occur. The sufficiency of such assets is tested by checking whether the bank is able to survive during a 30 days stress scenario when the liquidity needs increase unexpectedly. The bank is obliged to have at least such amount of the HQLA that it is able to cover the liquidity outflows over the next 30 calendar days, shall the stress scenario come true. The presumption is that during these 30 days the bank or the supervisory authority will take corrective actions in order to solve the higher liquidity need so that the bank can operate after the 30th day, or the problem can be solved in another appropriate way. The test conditions are specified by the supervisory authority. The stock of the HQLA shall be held continuously so that the bank can at any time meet the liquidity requirements, even if increased and unexpected liquidity outflows occur. (BCBS 2010, 3.)

The test scenario comprises many of the shocks which the banks had to face during the crisis that started in 2008. Such shocks comprise among other things a decrease of the retail deposit levels, unsecured whole sale funding and secured short-term financing; credit rating downgrade; increased market volatilities influencing the collateral quality and, thus, increasing liquidity needs; unscheduled withdrawals of credits provided to bank's clients and finally, additional purchases of debts or other liquidity outflows in order to avoid reputational risks. (BCBS 2010, 4.)

The LCR is expressed by the following equation:

$$\frac{\text{Stock of high – quality liquid assets}}{\text{Total net cash outflows over the next 30 calendar days}} \geq 100\%$$

The equation consists of two components: stock of the HQLA under the test conditions and total net cash outflows over the next 30 calendar days. The basic characteristics of these components are introduced in the following sections.

#### Characteristics of the HQLA

Easy and immediate conversion into cash at minimum or no loss of value is according to the BCBS (2010, 5) the basic prerequisite for assets to be considered the HQLA. In addition, the

BCBS (2010, 5-6) defines other four fundamental and four market-related characteristics which are essential from the viewpoint of liquidity.

Assets' low credit and market-related risks (1) such as issuer's high credit rating or low volatility, inflation or currency risk contribute to assets' high liquidity. Also, easy and unambiguous rules for valuation of assets are important in terms of liquidity (2). The so called wrong-way (highly correlated) risk shall be avoided (3). It means that assets issued by banks are riskier when there are liquidity problems in the financial sector. Finally, the transparency of listed assets (4) enhances, in comparison to unlisted assets, their liquidity.

As for the market-related issues, the assets shall always be marketable, e.g. repurchase contracts (repo) increase liquidity. The market shall be active and sizable (1) (high trading volumes and sufficient number of committed participants (2)). Non-concentrated, diverse market with heterogeneous participants is important for traded assets's liquidity (3). Additionally, under stressed conditions, the market participants move to buy rather high-quality assets (4). It means that the liquidity of high-quality assets increases and, on the contrary, the liquidity (demand) of low-quality, risky assets decreases (flight-to-quality). Also, central bank eligibility (e.g. for intraday liquidity needs or overnight liquidity facilities) is one of the characteristics of the HQLA. Additionally, the BCBS (2013b, 8) defines, in comparison to its previous paper from 2010, also low volatility of prices and spreads as one of the market-related characteristics of the HQLA.

In addition to the characteristics mentioned above, the HQLA have to fulfil certain operational requirements: e.g. the assets should be available at any time during the stress period; it should be possible to periodically, partially monetize the assets for the purpose of testing the actual liquidity; the assets have to be unencumbered (not used as collateral or credit enhancement for transactions); the assets should be available in any currency or jurisdiction in which the cash outflows may arise etc. (See more BCBS 2010, 6-7 and BCBS 2013b, 9-11.)

### Types of the HQLA

The BCBS (2013b, 11-15) differentiates between two types of the HQLA which have to meet the requirements mentioned above: level 1 assets and level 2 assets. Specified haircuts, i.e. reduction of assets' value used for the calculation of high-quality liquid assets' value, can (level 1 assets) or have to (level 2 assets) be applied. Both types of assets are introduced in this section.

#### (i) Level 1 Assets

It is possible to compile the whole stock of the HQLA of level 1 assets. The haircuts do not need to be applied. However, the supervisory authority can demand haircuts under specific conditions (e.g. duration, credit or liquidity risk of level 1 securities).

#### Level 1 Assets

- (a) coins and bank notes;
- (b) central bank reserves which can be withdrawn and used during a stress period;
- (c) marketable securities which are guaranteed by or represent claims on the following market participants: sovereigns, central banks, PSEs (Public Sector Entities), the Bank for International Settlements, the International Monetary Fund, the European Central Bank and the European Community or multilateral development banks (defined in the Basel II framework). In addition, these securities have to fulfil the following conditions:
  - 0% risk-weight according to the Basel II Standardized Approach for credit risk;
  - trading in recognized repo or cash markets (e.g. low level of concentration);
  - proven marketability during stress periods (reliable source of liquidity);
  - even when e.g. government guaranteed, the security must not be an obligation of a financial institution;
- (d) in case of a sovereign with non-0% risk-weight, sovereign or central bank debt securities issued in domestic currencies in the country of the liquidity risk or in the domestic country of the bank and
- (e) in case of a sovereign with non-0% risk-weight, domestic sovereign or central bank debt securities in foreign currencies can be deemed the HQLA up to the amount of the net cash outflows which are under stress. The cash outflows take place in the specific foreign currency and are connected to the bank's operations in the country where the liquidity risk occurs.

#### (ii) Level 2 Assets

Proportion of the level 2 assets may not be, after haircuts, more than 40% of the overall HQLA stock. The level 2 assets consist of level 2A assets with haircut of 15% and level 2B assets. The level 2B assets require acceptance by the supervisory authority. The haircuts applied to the level 2B assets are variable, depending on the risks, and higher (25% - 50%).



## Level 2A Assets

(a) marketable securities which are guaranteed by or represent claims on the following market participants: sovereigns, central banks, PSEs or multilateral development banks. In addition, these securities have to fulfil the following conditions:

- 20% risk-weight according to the Basel II Standardized Approach for credit risk;
- trading in recognized repo or cash markets (e.g. low level of concentration);
- proven marketability during stress periods (reliable source of liquidity) where the price decrease or haircuts' increase may not exceed 10% over a 30-day period during a relevant liquidity stress;
- the security, even when e.g. government guaranteed, must not be an obligation of a financial institution.

(b) corporate debt securities and covered bonds<sup>11</sup> fulfilling the following conditions:

- corporated debt securities must not be issued by a financial institution;
- covered bonds must not be bank's own bonds;
- long-term credit rating of at least AA- provided by a recognized external credit assessment institution (ECAI) or corresponding short-term rating, or an internal assessment of probability of default (PD) corresponding to at least AA- rating;
- trading in recognized repo or cash markets (e.g. low level of concentration);
- proven marketability during stress periods (reliable source of liquidity) where the price decrease or haircuts' increase must not exceed 10% over a 30-day period during a relevant liquidity stress.

## Level 2B Assets

(a) Residential mortgage backed securities (RMBS) which fulfil the following conditions:

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<sup>11</sup> For more detailed specification of corporate debt securities and covered bonds see BCBS 2013b, 13.

- the bank itself has not issued the securities, and the assets originating from the bank itself are not part of the securities;
- AA or higher long-term credit rating provided by a recognized ECAI or a corresponding short-term credit rating, shall the long-term rating not be available;
- trading in recognized repo or cash markets (e.g. low level of concentration);
- proven marketability during stress periods (reliable source of liquidity) where the price decrease or haircuts' increase must not exceed 20% over a 30-day period during a relevant liquidity stress;
- the assets of which the securities consist of may not contain other products than residential mortgages;
- the mortgages must be full recourse loans (liability of the mortgage owner to pay even in case of foreclosure) and their loan-to-value ratio (LTV) must not exceed 80% on average when issued and
- the issuers of the securities have to retain interest in the assets of which the securities consist of (risk retention regulations).

(b) Corporate debt securities<sup>12</sup> fulfilling the following conditions:

- the issuer must not be a financial institution;
- long-term credit rating from A+ to BBB- provided by a recognized ECAI or corresponding short-term rating, or an internal assessment of probability of default (PD) corresponding to the rating of A+ to BBB-;
- trading in recognized repo or cash markets (e.g. low level of concentration);
- proven marketability also during stress periods (reliable source of liquidity) where the price decrease must not exceed 20% or haircuts' increase must not exceed 20% over a 30-day period during a relevant liquidity stress.

(c) Common equity shares fulfilling the following conditions:

- the issuer must not be a financial institution;
- trading on exchange and central clearing;

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<sup>12</sup> For more detailed specification of corporate debt securities see BCBS 2013b, 13.

- the main stock index shall be set in the bank's home jurisdiction or in the jurisdiction of the liquidity risk according to the decision of the supervisor in the jurisdiction of index location;
- denomination in the home currency or in the currency of the liquidity risk;
- trading in recognized repo or cash markets (e.g. low level of concentration);
- proven marketability also during stress periods (reliable source of liquidity) where the price decrease must not exceed 40% or haircuts' increase must not exceed 40% over a 30-day period during a relevant liquidity stress.

#### Total Net Cash Outflows over the Next 30 Calendar Days

The main features of the total net cash outflows over the next 30 calendar days of the stress period are described in the following section according to the BCBS (2013b, 20-37).

The following formula shows how the total net cash outflows are calculated under a stress scenario:

$$\begin{aligned} &\text{Total net cash outflows over the next 30 calendar days} \\ &= \text{Total expected cash outflows} - \text{Total expected cash inflows} \end{aligned}$$

When calculating the total expected cash outflows the total number of outstanding liability balances and off-balance sheet commitments is multiplied by the expected run-off or draw-down rate.

The rate of expected cash inflows is used as multiplier for receivables in order to calculate the total expected cash inflows. The amount of expected cash inflows is limited to 75% of total expected cash outflows<sup>13</sup>. The double counting is prevented: the cash inflows (the denominator) connected with the assets which are part of the HQLA (the numerator) cannot be taken into account in the LCR calculation.

#### (i) Cash Outflows

The cash outflows consist of various contractual obligations, draw-downs (e.g. committed credit facilities such as lending obligations or committed liquidity facilities).

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<sup>13</sup> The reason is that, firstly, the banks do not only use expected cash inflows for reaching the liquidity standards, and secondly, they have to maintain a minimum amount of the HQLA, that is, 25% of the total cash outflows. (BCBS 2013b, 34.)

ties e.g. to other financial institutions) and run-off rates applied to various types of liabilities. The range of run-off rates is between 3% and even 100%, depending on the susceptibility to risk factors. It means that low run-off rates are applied to liabilities with low risk factors (low probability of cash outflows connected with the liability). A more detailed overview of the run-off rates is presented in the Attachment 1 (Cash Outflows).

The liabilities and funding related to the cash outflows are as follows:

- retail deposits (stable deposits and less stable deposits );
- unsecured wholesale funding (unsecured wholesale funding provided by small business customers; operational deposits generated by clearing, custody and cash management activities; deposits in institutional networks of cooperative banks; unsecured wholesale funding provided by non-financial corporates and sovereigns, central banks, multilateral development banks, and PSEs; unsecured wholesale funding provided by other legal entity customers);
- secured (collateralized) funding;
- other (e.g. derivatives cash outflows).

(ii) Cash Inflows

Only expected contractual cash inflows from the performing portfolio without probability of default within the subsequent 30 days are included in the available cash inflows for the calculation of the LCR. Contingent cash inflows are not included. The bank and the supervisory authority have to follow the cash inflow concentration so that the bank's liquidity does not solely depend on one or a limited number of counterparties. In addition, the 75% cap of the total expected outflows shall be taken into account (see Footnote 13).

Special rules shall be applied for the calculation of the cash inflows associated with specific financial product categories. Some of the categories provide 100% cash inflows for the calculation while some of them cannot be taken into account. The Attachment 2 (Cash Inflows) provides an overview of the factors applied for the particular categories.

The above referred categories are as follows:

- secured lending, including reverse repos and securities' borrowings (e.g. the maturing reverse repos which are backed by the level 1 assets will not provide the calculation with any cash inflows due to the assumption that they will be rolled-over; the maturing reverse repos which are backed by the level 2 assets will provide the calculation with cash inflows up to the amount of the haircut applied to the asset);
- committed facilities (it is e.g. assumed in the calculation that the credit or liquidity facilities held in another financial institution cannot be drawn down, meaning that these facilities do not provide the calculation with any cash inflows, the purpose of this rule is to minimize the contagion risk during liquidity stress periods);
- other inflows by counterparty (retail and small business customer inflows and other whole sale inflows, e.g. inflows from only fully performing loans should be taken into account);
- other cash inflows (e.g. derivatives' cash inflows).

### 6.3.2 Net Stable Funding Ratio

The BCBS (2010, 25-31) defines the minimum level and characteristics of the NSFR. The aim of the ratio is to secure stable liquidity funding over a period of one year. The NSFR helps, together with the LCR, to monitor the funding of the banks' assets and operations. However, the NSFR, in comparison to the LCR, helps to monitor the liquidity structure in the medium and long-term. The NSFR helps to assess the long-term liquidity needs especially during abundant market liquidity: under such conditions the banks can plan their liquidity reserves taking into account possible problems on the markets. Also, it provides an overview of both on- and off-balance sheet items. Finally, it gives banks incentives to fund their assets also by using funds with maturities well over the 30 days limit.

The NSFR is defined as

$$\frac{\text{Available amount of stable funding}}{\text{Required amount of stable funding}} > 100\%$$

#### Available Stable Funding

Available Stable Funding (ASF) represents such equity and liabilities which are able to provide reliable funding over a one-year period under stress conditions (e.g. profitability or solvency decrease due to increased credit, market, operational or other risks and/or rating downgrade and/or reputation or creditworthiness related material event). Except regular open market

operations, possible central bank funds are not included in the ratio. The ASF consists of bank's:

- capital;
- preferred stock with maturity which equals to or is greater than 1 year;
- liabilities with maturity which equals to or is greater than 1 year;
- non-maturity and term deposits with maturity of less than 1 year which are expected to remain in the institution during the period of stress;
- wholesale funding which is expected to remain in the institution during the period of stress with maturity of less than 1 year.

Similarly as with respect to the LCR calculation, an ASF factor is applied in the calculation of the NSFR for particular types of equity and liabilities (see Attachment 3. NSFR Overview).

### Required Stable Funding

Required stable funding (RSF) consists of bank's assets and off-balance sheet items that are measured taking into account their liquidity exposures. An asset's liquidity exposure is expressed by a RSF factor. Lower RSF factor is applied to more liquid assets. The less liquid assets get higher RSF factor. The less liquid assets need more stable funding than more liquid assets. The more liquid assets may be used as a source of liquidity. E.g. the RSF factor of 0% is applied for asset category cash.

Each asset and off-balance sheet item is multiplied by a particular RSF factor and the resulting sum is used in the NSFR calculation. The assets and the RSF factors are presented in the Attachment 3 (NSFR Overview).

### 6.3.3 Requirements for the Additional Monitoring Metrics

As mentioned in the Chapter 6.2.4, the Additional Monitoring Metrics provides the supervisory authority with additional tools for monitoring the liquidity risk of an institution. The EBAs' Standards on Additional Liquidity Monitoring Metrics (see more under EBA 2013a) are based on the principles laid down by the BCBS and will be part of the European Single Rulebook for banking. According to Pezzotta (2013, 9), the principle of proportionality<sup>14</sup> can be applied to the use of the Additional Monitoring Metrics (similarly with the SREP, see Chapter 6.4.2). The monitored areas are defined in the Standards (EBA 2013a, 3-4) as follows:

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<sup>14</sup> The scope of the application is determined on the basis of the size, systemic importance, nature, scale and complexity of the activities of the institution. (EBA 2013b, 6.)

## Maturity ladder

The reporting captures the maturity transformation, i.e. the maturity mismatch in the balance sheet when borrowing money for a shorter period of time than lending money out.

## Concentration of funding by counterparty

An institution is obliged to disclose to the supervisory authority the 10 largest counterparties from which it has received funding exceeding 1% of total liabilities. This concerns both the wholesale and the retail funding and helps to identify such sources of funding loss which could lead to liquidity problems.

## Concentration of funding by product type

Shall the wholesale or retail funding exceeding 1% of total liabilities be provided by using one single product category, the institution is obliged to report the total amount of such funding (related to one product type).

## Concentration of counterbalancing capacity by issuer/counterparty

An institution is obliged to inform about the 10 largest holdings of assets or liquidity lines. This helps to monitor the institution's counterbalancing capacity which means access to excess liquidity during stress periods.

## Prices of various lengths of funding

An institution shall inform about the volume and price of the funding with maturity from overnight to 10 years.

## Rollover funding

An institution is obliged to inform daily about maturing funds and new received funds. The information shall always be given one month ahead.

## **6.4 Pillar II: ICAAP, ILAAP and SREP**

### **6.4.1 ICAAP and ILAAP**

In its ICAAP report (Pillar II), the institution is obliged to give a picture of its overall risk bearing capacity and the report is one of the most essential sources of information for the supervisory authority when conducting the review and evaluation of the institution. The ICAAP report to the supervisory authority has already been obligatory for the institutions

under the Basel II and it will preserve this character in the Basel III framework (about the ICAAP see also Chapter 5.3.2).

However, in the Basel III environment including the above described new quantitative liquidity requirements within Pillar I, the ICAAP will be extended as well: in addition to the ICAAP, the institution is obliged to conduct internal liquidity adequacy assessment process (ILAAP). The ILAAP as a process contains similar components as the ICAAP and its aim is to provide the institution with a planned and proactive approach to liquidity (risk) management taking into account the institution's risk appetite. With respect to both processes, there is no detailed regulation guiding the institutions as how to establish the process, but each institution has to develop its own techniques and methodologies for the conducting of the assessment. (Risk Dynamics s.a.)

#### **6.4.2 SREP**

According to the Article 107(3) of the Directive 2013/36/EU, the EBA shall as a part of the European Single Rulebook for banking draft guidelines defining methods and procedures for the SREP and the assessment of the risk management of the institutions. The principle of proportionality shall be applied. The methodology for assessing the liquidity and funding risks shall be part of the SREP that will, in addition, consist of methods for assessing the overall risk management, corporate governance, internal approaches for risk calculation, credit and counterparty risks, residual risk, concentration risk, securitization risk, market risk, interest rate risk of non-trading activities and operational risk. At the moment of writing this, there are discussions concerning the future form of the SREP and the final rules shall be presented by the end of 2014. (EBA 2013b, 4-5.)

At the moment, the guidelines concerning the SREP are not in direct connection with Pillar I due to the fact that there are no specific liquidity and funding requirements in Pillar I of the Basel II framework. However, when the new Pillar I requirements, the LCR and the NSFR, are implemented the monitoring of them will be included in the supervisory review process, in addition to the Pillar II issues. (EBA 2013b, 6.)

The assessment of liquidity risk and its management within the CRD IV/CRR compliant SREP will consist of the following three components:

- assessment of liquidity risk - evaluation of liquidity needs in the short- and medium-term, evaluation of intraday liquidity risk, evaluation of liquidity buffer and counterbalancing capacity, supervisory liquidity stress testing (EBA 2013b, 9);



- assessment of funding risk - evaluation of the funding profile, evaluation of the risks connected to the stability of the funding profile, evaluation of the market access, evaluation of the expected change in funding risks based on the institution's funding plan (EBA 2013b, 13);
- assessment of the liquidity and funding risk management - review of the institution's liquidity risk strategy and liquidity risk tolerance, review of the institution's organizational framework, policies and procedures, review of the institution's risk measurement and reporting, review of the institution's internal control framework for liquidity risk management, review of the institution's liquidity contingency plan, review of the institution's funding plan (EBA 2013b, 16).

As mentioned in the discussion paper of the EBA (EBA 2013b, 8), the supervisory authority can use the following sources of information for assessing the liquidity and funding risks within the SREP. The list gives a comprehensive overview of the institution's obligations concerning its liquidity and funding risk management and the assessment of it as well as of the liquidity reporting:

- results of the analysis of the institution's business model, especially the results showing the sources of liquidity risk;
- obligatory reports based on the Article 415 of the Regulation 575/2013/EU - based on this regulation, the EBA has elaborated two implementing technical standards: Standards on Additional Liquidity Monitoring Metrics (see Chapter 6.3.3) and Standard on Supervisory Reporting for Liquidity Coverage and Stable Funding;
- national regulatory reports when needed;
- data supplied in connection with the supervisory actions;
- information the institution has supplied beyond the Pillar I based regulatory reporting (e.g. the institution's own assessment of the appropriate liquidity and funding levels and needs as well as the assessment of the risk management).

Even when the Supervisory Review and Evaluation Process shall be conducted in compliance with the forthcoming liquidity and funding requirements of Pillar I, the review and evaluation is, due to the focus on the assessment, intertwined with the Pillar II requirements. The main aim of the SREP guidelines is to provide the supervisory authorities with a methodology for assessing and evaluating the risks, among them the liquidity and funding risks, of the institutions.

## **6.5 Pillar III: Transparency**

According to the Pillar III rules, the institution shall publicly disclose financial information contributing to the transparency and mutual trust on the markets. At the moment, the EBA develops standards on the disclosure of information concerning various risk areas. These standards will be in accordance with the BCBS's requirements and the CRD IV/CRR texts. At the time of writing this, the newest available information on the topic can be found in the review of the banks' transparency in their Pillar 3 reports (EBA 2013c) - published on December the 9th, 2013. It is, naturally, based on the Basel II requirements.

## **6.6 Possible Challenges in Applying the Basel III Requirements**

As mentioned above, the new regulatory requirements mean the tightening of conditions for liquidity and funding risk management. The banks will have to cope with many challenges which will increase their administrative burden and, consequently, increase their operational costs. The sample companies already mention some of the challenges connected with the new requirements in their publications showing the data from 2013 (see Chapter 8). The KPMG (2011, 10-11) gives a more comprehensive overview on the regulation related challenges of the banks.

As regards the LCR, the holding of higher amount of liquid assets will influence the profitability of banks because those assets cannot be used in the operations. Due to the change of funding structure and increased importance of long-term funding, there may be problems with the availability of long-term funding because e.g. the institutional investors generally try to minimize their investments in the financial sector. In addition, the possible partial incorrect use of run-off rates by the supervisory authorities may lead to discussions on the fairness of the used rates.

Concerning the NSFR, the wholesale deposits with maturities over one year will have to be increased. The pressure on the increase of those deposits can cause challenges due to e.g. low deposit demand on the market. Additionally, it can increase the costs of funding. At the same time, the banks are also cautious about using the long-term debt. Managing the NSFR by varying asset mix can sometimes lead to an increase of short-term assets which may have a negative impact on profitability. Also, the competition may be distorted because the banks with the higher NSFR can influence the prices of assets on the markets.

## 7 Case Companies

The three major banks operating in Finland are used as a sample for the analysis of the banking sector liquidity position on the Finnish market. The sample consists of OP-Pohjola Group, Nordea Bank and Danske Bank. The shares of the sample companies are traded on the stock exchange. Thus, the companies are obliged to publish information on their results, structure and operations comprehensively.

The sample companies represent, with their market share of public loans and public deposits, 74,3% and respectively 78,8% of the Finnish market (data from 2012, Federation of Finnish Financial Services 2013, 4). Information on the liquidity position and liquidity risk can be found in the banks' financial statements and on their web pages.

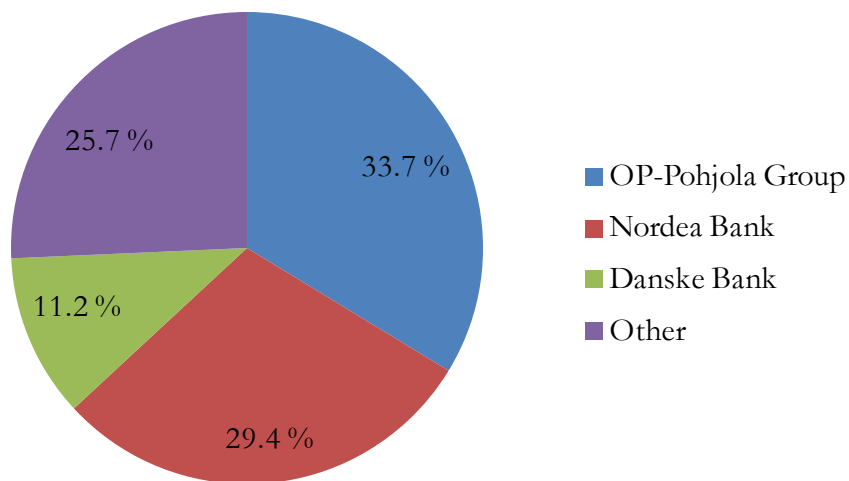


Figure 4. Market Share of Public Loans in Finland, December the 31st, 2012 (Federation of Finnish Financial Services 2013, 4.)

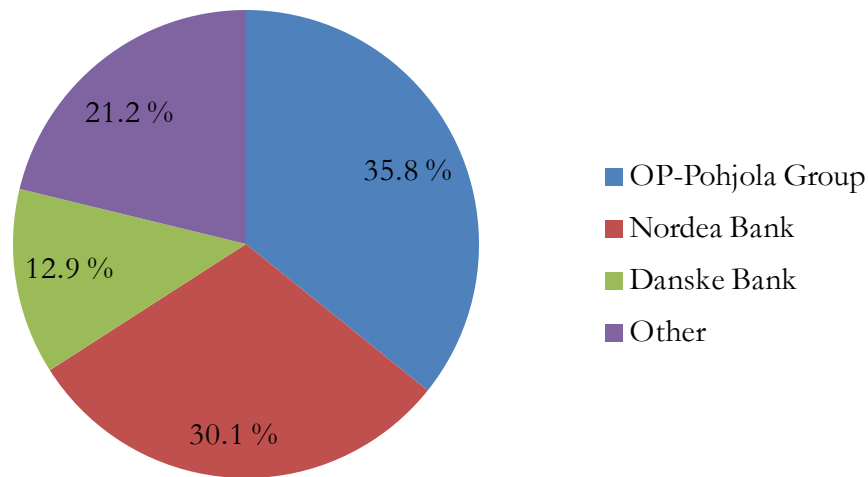


Figure 5. Market Share of Public Deposits in Finland, December the 31st, 2012 (Federation of Finnish Financial Services 2013, 4.)

The case companies operate in several business lines. However, most of their income stems from the banking services. This is important with regard to the banking sector related research objective: the companies' main business line is the object of the research.

Information on the balance sheet total given in the following chapters is essential, for it gives a picture of the comparability of the figures describing the liquidity position of the companies.

## 7.1 OP-Pohjola Group

OP-Pohjola Group is the largest credit institution in Finland. Its headquarters is situated in Finland. According to the Federation of Finnish Financial Services (2013, 4), the Group's market share of public loans in Finland was 33,7% and the market share of public deposits 35,8% on the 31st of December 2012.

In addition to banking services, OP-Pohjola Group provides investment and insurance services. Thus, the Group's business operations consist of three segments: banking, non-life insurance and wealth management. When looking at the earnings it can be seen that the banking is the largest segment: According to OP-Pohjola Group's Executive Board Report (OP-Pohjola Group 2014, 19), the earnings before taxes from the banking reached EUR 411 Million in 2013. The earnings before taxes from the non-life Insurance were EUR 167 Million and from the wealth management EUR 113 Million.

The legal structure of OP-Pohjola Group is mentioned here in order to explain the position of Pohjola Bank Plc. - the Group's central bank. Pohjola Bank is important as regards the analysis of the Group's liquidity position and liquidity risk management.

The Group consists of about 180 member cooperative banks and OP-Pohjola Group Central Cooperative as well as of their subsidiaries and the companies closely related to them. In addition to the credit institutions, there are also other financial institutions and service companies in the Group. There are insurance companies in OP-Pohjola Group and they form together with the Central Cooperative a financial and insurance conglomerate. OP-Pohjola Group Central Cooperative is owned by 180 cooperative banks. These banks are owned by approximately 1,4 Million owner-members. Pohjola Bank is both the member and the subsidiary of the Central Cooperative. (OP-Pohjola Group 2014, 36; OP-Pohjola Group s.a.)

The balance sheet total of OP-Pohjola Group was on the 31st of December 2013 EUR 100,98 Billion. (OP-Pohjola Group 2014, 45.)

## **7.2 Nordea Bank**

Nordea Bank is the second largest credit institution operating in Finland. Nordea's headquarters is situated in Sweden. According to the Federation of Finnish Financial Services (2013, 4), the bank's market share of public loans in Finland was 29,4% and its market share of public deposits 30,1% on the 31st of December 2012.

According to Nordea's Annual Report 2013 (Nordea Group 2014, 2-3), Nordea has the leading position in the retail customers as well as in the corporate and institutions market in the Nordics. In Finland, Nordea is number 1-2 in the retail customers and number 1 in the corporate and institutions market. The public loans of Nordea are divided by country as follows: Sweden (29%), Denmark (27%), Finland (21%), Norway (18%) and the other countries (5%).

According to Nordea's Board of Directors' Report (Nordea Group 2014, 20 & 50-52), Nordea divides its business into three business areas: retail banking, wholesale banking and wealth management (including private banking, asset management as well as life and pensions). In terms of the operating profit, the retail banking contributed with 45% (EUR 1862 Million), the wholesale banking with 35% (EUR 1455 Million) and the wealth management with 18% (EUR 735 Million) to the operating profit in 2013.

The banking sector's participation in the operating profit of Nordea was in total 80%. Thus, the banking was the largest business area of the company in 2013.

The balance sheet total of Nordea Group was EUR 630,43 Billion on the 31st of December 2013. (Nordea Group 2014, 81.)

### **7.3 Danske Bank**

Danske Bank is the third largest credit institution operating in Finland with the headquarters in Denmark. According to the Federation of Finnish Financial Services (2013, 4), the bank's market share of public loans in Finland was 11,2% and the market share of public deposits 12,9% on the 31st of December 2012.

Geographically, in 2012 the retail banking in Finland covered 10,9% of Danske Bank's banking activities and mortgage finance in comparison to 52,7% of them in Denmark and 10,8% and 9,6% of them in Sweden and Norway. (Danske Bank s.a.)

Danske Bank's core activities include personal banking, business banking (for SME's), corporate and institutions (wholesale banking for the largest institutions and corporations), Danske Capital (asset and wealth management products and services), Danica Pension (life insurance and pensions) as well as other activities. (Danske Bank 2013, 27-38.)

Providing banking services is the main activity of the company. According to Danske Bank (2013, 27), the profit before taxes from the banking activities (personal banking, business banking and corporate and institutions) represented 94% (EUR 1,45 Billion; ECB Exchange Rate on the 31st of December 2013: 1 EUR=7,4593 DKK) of the profit of the core activities and 108% of the total profit of the Group (EUR 1,35 Billion)<sup>15</sup>.

The balance sheet total of the Group was EUR 432,62 Billion on the 31st of December 2013. (Danske Bank 2014, 66.)

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<sup>15</sup> The non-core activities incurred a loss which means that the total Group profit was smaller than the profit from the core activities.

## 8 Liquidity Position of the Major Banks on the Finnish Market

This chapter contains the analysis of the case companies' liquidity position. As mentioned above (especially in Chapter 6), according to the new legislation, the institutions shall more comprehensively consider liquidity and funding risk management in their operations as well as the sufficient availability of liquidity and funding. The analysis gives an overview of liquidity and funding risk management and liquidity and funding positions of the case companies.

It was necessary to decide whether to base the analysis on the data concerning the whole Group or solely a subsidiary/branch. The analysis of liquidity and funding risk management as well as liquidity position is based on the data included in the Groups' financial statements as well as in the other Group level documents. The data concerning the subsidiaries, branches or other companies that are part of the Group and operate on the Finnish market is not part of the analysis. Reason for this is that the data regarding the state and position of the Group shows the position of the subsidiary as well: in all sample companies the Group liquidity rules are applied in the subsidiaries. Additionally, the excess liquidity in the parent company can be transferred to the other group companies if needed. This means that liquidity problems of a subsidiary can be solved by the parent company but usually not vice versa.

OP-Pohjola Group is a Finnish financial institution. Nordea Bank (Finland) and Danske Bank (Finland) are parts of international institutions with their headquarters outside Finland (still in the EU). All three institutions belong to different jurisdictions and it is relevant to consider whether this is an obstacle for an adequate research. The case companies' financial statements as well as other documents including the data from 2013 (the newest available annual data) are based on each country's national legislation that is based on the common EU regulation deriving from the Basel II accord. However, there are quantitative liquidity requirements (Pillar I) in the legislation of some European countries, even though there are only qualitative requirements (Pillar II) concerning liquidity in the Basel II based European legislation. Due to this, there might be differences in the current quantitative liquidity requirements of the EU member states but not in the Pillar II based qualitative requirements (ICAAP, Supervisory Review Process). Thus, the national specifics concerning quantitative requirements influence the companies' financial statements and the other published quantitative data of 2013, i.e. the data this research is based on. It is relevant to have a look also at these facts when describing the situation of the sample companies. Since the main objective of this study is to find out about liquidity position of the sample companies and to explore what the liquidity situation on the Finnish banking market is, but not to compare the companies, the different ways of measuring liquidity in the companies is not an obstacle for the research. In addition, the Pillar II rules on

risk management and the ICAAP are common and with respect to them also comparisons are possible.

Another conclusion is that the analysis cannot be based on the Basel III requirements because the CRD IV/CRR package was not valid in 2013. However, some aspects of the forthcoming legislation are handled in the research, especially possible challenges the institutions may be confronted with.

## **8.1 OP-Pohjola Group**

### **8.1.1 Liquidity Risk Management**

#### **Organization of Liquidity Risk Management**

As referred in the Financial Statements 2013 (OP-Pohjola Group 2014, 68-69), OP-Pohjola Group Central Cooperative is responsible for good corporate governance, risk management and capital adequacy management at Group level and it has both right to control and responsibility to monitor risk management and capital adequacy of the credit institutions in the Group. However, each institution in the Group is responsible for its own risk and capital adequacy management.

OP-Pohjola Group Central Cooperative sets the policy guidelines and approves the liquidity risk limits for the liquidity risk management of the Group. The approval of Central Cooperative concerns the funding plan, quantitative limits and qualitative characteristics of the liquidity buffer, the contingency funding plan for stress periods and the model for controlling liquidity status. The last three of these are determined by using threat-scenario stress tests.

Pohjola Bank has the key role in OP-Pohjola Group's liquidity and funding risk management. Pohjola's Board of Directors approves and/or reviews yearly the liquidity risk policy which determines the maximum structural funding risk and the minimum liquidity buffer as well as the methods for liquidity risk management. Pohjola Bank, as the Group's central bank, ensures that liquidity and funding are sufficient in the whole Group. However, the overall responsibility for Pohjola's actual liquidity risk and funding liquidity risk management measures, long-term funding as well as the maintenance of liquidity portfolios lies with the Group Treasury. The key sources of funding are: certificates of deposits, bonds and notes, deposits from other banks and member cooperative banks, deposits from the public and shareholders' equity. Also, Pohjola's credit rating is essential for the access to funding from the markets with an adequate price.



The liquidity of Group's insurance and pension institutions is added to the Group's total liquidity and has an impact on Pohjola Bank's liquidity position. (OP-Pohjola Group 2014, 79.)

The Pohjola's liquidity risk management comprises liquidity planning, the structure of the balance sheet, taking continuously care of sufficient liquidity levels and of diversifying the funding according to maturity, counterparty, product and market area. The means of liquidity risk management at Group level are the making of various stress scenarios helping to describe threats and the use of different tools for securing the liquidity. The risk management function and the Treasury report monthly on the funding risks and daily on the liquidity risks to the business lines/to the management of the Group.

#### Liquidity Risk Management: Structural Funding Risk and Funding Liquidity Risk

OP-Pohjola Group aims to keep the liquidity on the level that is sufficient to secure its ability to fulfil its financial obligations for a period of at least 12 months, also in case of the materialization of potential risks. The Group tries to reach this goal by keeping a sufficient liquidity buffer and with other methods in line with its liquidity contingency plan. (OP-Pohjola Group 2013.)

OP-Pohjola Group (2013a) defines the structural funding risk and the funding liquidity risk in its Liquidity Risk Management Principles. Management of these risks is described in the following paragraphs. In general, the maturity differences between receivables and liabilities are referred to in the Principles.

The structural funding risk arises from challenges in long-term lending, more precisely it can be described as refinancing risk due to the funding structure. The most severe risk arises from the maturity differences in long-term lending and funding (deposit customer behaviour can change rapidly). This concerns both retail banking and wholesale funding. For the monitoring of the long-term funding risk the Group uses the ratio of long-term assets to liabilities. This ratio must not exceed certain limits. The Group has also set limits for long-term funding maturity distribution.

The funding liquidity risk arises from the inability of a bank to meet the current and future cash flow and collateral needs (expected and unexpected). The inability to meet these obligations can negatively affect the bank's daily operations or its financial position. In order to avoid this risk the bank has to keep a portfolio of liquid notes and bonds. These bonds and notes have to be issued by institutions with high credit rating and they have to be eligible as collateral for central bank debt or it should be possible to sell them quickly on the markets. In

OP-Pohjola Group the funding liquidity position is monitored with help of scenarios concerning maturing cash flows and liquidity buffers. The scenarios have given limits and values.

According to the Financial Statements (OP-Pohjola Group 2014, 80), the LCR will be a part of the Group level reporting and the reporting of it will start in 2015.

The liquidity requirements in Finland are based on the Finnish CIA 121/2007 and on the FIN-FSA Standard 4.4d (see 5.3.3) that are Basel II compliant. There are no quantitative liquidity requirements in Finland before the CRD IV/CRR package enters into force.

#### Handling of Liquidity Risk in Internal Capital Adequacy Assessment Process

OP-Pohjola Group (2013b) takes into consideration all risks it is exposed to in its Internal Capital Adequacy Assessment Process (ICAAP) that is conducted according to the Basel II rules. The ICAAP consists of the risks taken fully or partially into account under Pillar I, the risks outside the scope of Pillar I as well as all the other risks associated with its business and arising from its business environment, i.e. the assessment of the liquidity risk and its management falls within the scope of the process. The ICAAP report of the Group is not publicly available and only little information on the process and the results can be found on the company's web pages and in the Financial Statements. The Group mainly uses its own economic capital model in assessing the risks in its ICAAP.

Based on the available financial information of the Group, there is no reason to believe that the ICAAP results concerning the liquidity risk would require the Group to take this risk into account in its capital planning. Thus, it can be assumed that the liquidity risk has been taken into account in the ICAAP of the Group and on the basis of its results, it has been concluded that there is no need to allocate capital for the liquidity risk. However, it is not possible to find out how the liquidity risk has been handled in the ICAAP or which and how extensive risk mitigation techniques the Group has considered to be adequate on the basis of the results of the process.

#### **8.1.2 Liquidity Position**

According to the Executive Board Report (OP-Pohjola Group 2014, 13-14), the funding and liquidity positions of OP-Pohjola Group are strong. The loan-to-deposit ratio was stable and the access to funding was good in 2013.

Further, according to the Report, if the amount of deposits shrank moderately and the wholesale funding became unavailable the liquidity buffer and the other sources of funding defined

in the contingency funding plan would cover funding for at least 24 months. This means that the goal of at least 12 months has been reached.

Table 3. Liquidity Buffer on the 31st of December 2013 (EUR Billion) (OP-Pohjola Group 2014, 14.)

Deposits with central banks	2,0
Notes and bonds eligible as collateral	7,4
Corporate loans eligible as collateral	3,3
<b>Total</b>	<b>12,7</b>
Receivables ineligible as collateral	0,7
Liquidity buffer at market value	13,3
Collateral haircut	-1,0
<b>Liquidity buffer at collateral value</b>	<b>12,3</b>

The liquidity risk indicators (net cash flows by maturity) are used by OP-Pohjola Group for controlling both the structural funding risk and the funding liquidity risk.

The structural funding risk indicator (based on the balance sheet of the Group) shows the maximum amount of net cash flows with different maturities. At the end of 2013 the limits set for the maturing net cash flows in the Group balance sheet were not exceeded for any maturity period.

The sufficiency of primary liquidity buffer for OP-Pohjola Group's net cash flows (expected and unexpected in case of moderate decline of the deposits) that are paid out daily is assessed by the funding liquidity risk indicator. At the end of 2013 OP-Pohjola Group was able to cover a period considerably longer than 30 days (the risk limit) with its liquidity buffer.

## 8.2 Nordea Group

### 8.2.1 Liquidity Risk Management

#### Organization of Liquidity Risk Management

According to Nordea's Board of Directors' Report (Nordea Group 2014, 61-62), the Group Treasury is in charge for implementing Nordea's liquidity strategy, for maintaining adequate liquidity position and for conducting liquidity risk management measures. The limits for liquidity risk are defined by the Board of Directors and the Risk Committee. The Board of Directors also defines the liquidity risk appetite. The principles of Nordea's liquidity risk man-

agement and strategy are defined in the policy statements. The policy statements contain information and definitions concerning liquidity measures, limits and organizational processes. Stress testing and a business continuity plan are an important part of Nordea's liquidity risk management.

#### Liquidity Risk Management: Short-term and Long-term Liquidity Risk

The liquidity risk measurement methods of Nordea comprise both aspects of the risk, short-term and long-term structural liquidity risk.

The short-term liquidity risk is measured with the help of three risk indicators. The funding gap risk which indicates the expected maximum liquidity need during the next 30 days is measured for all relevant currencies and its maximum limit is defined by the Board of Directors. Nordea also holds a liquidity buffer for immediate liquidity needs. The level of the liquidity buffer is defined by the Board of Directors and it consists of the central bank eligible securities. The buffer is held by the Group Treasury. The survival horizon without access to market funding in case of a stress event is also defined by the Board of Directors. The concept of the survival horizon metrics is similar to the LCR and the metrics shows the excess liquidity after 30 days without access to market sources.

Regarding the long-term structural liquidity risk, the Board of Directors defines the level of Net Balance of Stable Funding (NBSF). The NBSF expresses the difference between stable liabilities and stable assets (with maturities more than 12 months) where the stable assets are financed by the stable liabilities. The target for the NBSF is a positive figure in order to make the above mentioned financing possible.

In order to maintain the public trust Nordea publishes information on its liquidity position on a regular basis.

Nordea uses the LCR in its liquidity reporting. According to the Capital and Risk and Management Report 2013 (Nordea Group 2014a, 54), the Board of Directors defines the limits for the minimum LCR level. Nordea Group calculates the LCR in accordance with the Swedish rules.

According to Göthlin (2013), the LCR requirement was presented by the Swedish Financial Supervisory Authority in 2013 (Regulation FFFS 2012/6). The LCR calculation is based on the Basel III rules and concerns institutions with balance sheet total over SEK 100 Billion (together eight financial groups in Sweden). The detailed Basel III rules were not known at the time of introduction of the Regulation and the European legislation implementing the Basel III requirement was not in force. However, the Swedish Financial Supervisory Authority tried

to create well in time the LCR rules that would be in compliance with and even stricter than the European rules based on the Basel III accord.

#### Handling of Liquidity Risk in Internal Capital Adequacy Assessment Process

According to the Capital and Risk Management Report 2013 (Nordea Group 2014a, 9 & 63-64), the internal capital adequacy assessment process (ICAAP) is established to determine the internal capital requirements that reflect all risks and to assess the capital adequacy. Thus, among the other types of risk, the liquidity risk falls within the scope of the ICAAP. Again, similarly as with the OP-Pohjola Group, the techniques with which the ICAAP has been conducted as well as the particular results of the process are not disclosed. With respect to the overall results of the ICAAP, the Group states in the Report that its capital levels continue to be adequate to support the risks taken, both from an internal perspective as well as from the perspective of supervisors.

Interestingly enough, the Group provides the reader with the following statement on the general treatment of the liquidity risk:

”Liquidity risk is a Pillar II risk, however it is not included in the capital framework, instead it is mitigated through active management of liquidity... The liquidity risk management focuses on both short-term liquidity risk and long-term structural liquidity risk.” (Nordea Group 2014a, 63-64.)

Based on this statement it can be concluded that the Group does not find the liquidity risk to be such that it requires some capital to be allocated for it, but it solely leans on the effective risk management in order to keep the risk on a bearable level, i.e. the liquidity risk does not seem to be one of the most severe ones on the risk map of the Group.

#### **8.2.2 Liquidity Position**

According to Nordea’s Board of Directors’ Report (Nordea Group 2014, 61-62), the short-term liquidity risk was moderate in 2013.

The expected average need of liquidity during the next 30 days was EUR 16,8 Billion in 2013. The average amount of liquidity buffer was EUR 64,4 Billion and the range EUR 58.2 – 72.5 Billion in 2013. The average survival horizon was EUR 59 Billion with the range of EUR 49 – 68.2 Billion in the same year.

As for the long-term liquidity risk, the level of the NBSF was EUR 49,2 Billion at the end of 2013 and positive (meeting the target) with respect to the whole year 2013.

Regarding Nordea's funding sources in 2013, e.g. the short-term programs with an average maturity of 0,2 years comprised EUR 52,3 Billion and the long-term programs with an average maturity of 5,8 years comprised EUR 133,3 Billion.

The Nordea Group's LCR (not a Basel III/CRD IV -compliant ratio) was 117% (yearly average 130%) at the end of 2013. Nordea fulfils the LCR requirements in all currencies combined and separately in USD and EUR.

## **8.3 Danske Bank Group**

### **8.3.1 Liquidity Risk Management**

#### Organization of Liquidity Risk management

The liquidity risk management is described in the Risk Management 2013 Report (Danske Bank 2014a, 77-82).

According to the Report, the Board of Directors of Danske Bank Group issues the following documents: the Liquidity Policy and Appetite including a definition of the liquidity risk structure and its governance as well as the Liquidity Instructions including limits and calculation methods. Both documents are essential for the Group's liquidity risk management. Liquidity risk appetite is based on the avoidance of financial and regulatory default as well as on the market reliance, i.e. on the reliance to availability of the wholesale funding and the liquidity in order to minimize loan-to-deposits shortfalls.

The Group Liquidity Risk Committee has broad authority and responsibility to monitor the Group's liquidity and funding risk profile and management. The Group Treasury is responsible for maintaining the liquidity and funding on sufficient levels. The Group Risk Management function internally monitors the liquidity risk management and its compliance with the liquidity risk appetite.

In Danske Bank Group the liquidity risk management is conducted in a centralized way and on a consolidated basis. The Group's internal rules are binding for all Group companies. Nevertheless, possible local regulatory liquidity requirements concerning e.g. subsidiaries have to be complied with by the local entities.

#### Liquidity Risk Management: Short-term and Long-term Liquidity Risk

With regard to short-term liquidity risk, the Group maintains a liquidity buffer consisting of liquid assets (see Table 4 in Chapter 8.3.2). The buffer can be used for covering liquidity needs both under normal and stress conditions. For liquidity purposes, Danske Bank Group makes

use of its strong position in Danish kroner in order to offset possible deficiencies in other currencies. For that purpose, the Board of Directors, the All Risk Committee and the Group Liquidity Risk Committee set limits for the amount of Danish kroner and the other currencies.

The determination of the minimum buffer is based i.a. on the LCR of at least 110%, a minimum operational survival horizon and stress tests. It can be concluded that the LCR referred to is not a Basel III/CRD IV either Basel II -compliant ratio (see Danish Financial Business Act 885/2011, Section 152). The Danish national legislation containing the LCR requirements has no direct connection to Basel regulation. Firstly, the requirements are stricter than in Basel II legislation (the quantitative liquidity requirements are not determined under Pillar I). Secondly, the Basel III LCR requirements under Pillar I are calculated in different way (see Chapters 6.3.1 and 8.3.2).

The stress tests examine (based on the assumption that the lending will continue) the liquidity sufficiency in case of a Group specific stress scenario, a general crisis on the market and the combination of both. Also a stress-to-fail test is conducted.

Downgrading can also mean a loss of liquidity, since the validity of some contracts is linked to the company's rating. Due to this, the company's downgrading can lead to premature fulfilment of some contracts.

In order to secure the funding of its operations even during distortions on the financial markets Danske Bank diversifies its funding sources according to the product, currency, maturity and counterparty. The maturities in long-term funding are followed. The most important funding sources are retail deposits (deemed stable) and wholesale funding (deemed less stable) consisting of deposits from credit institutions and central banks, certificates of deposits, commercial papers, medium term notes, covered bonds, subordinated liabilities and others. Regular stress tests ensure that the bank's survival horizon is at least twelve months shall the capital markets be closed and the refinancing be unavailable.

#### Handling of Liquidity Risk in Internal Capital Adequacy Assessment Process

With respect to the ICAAP the scope of which as a general principle comprises among the other risks the assessment and the management of the liquidity risk, the Danske Bank Group does not disclose the particular techniques according to which it has been conducted or the particular results of it. However, some information on the results of the ICAAP can be found.

According to the Internal Capital Adequacy Assessment Report (Danske Bank 2014b, 5), the Group does not reserve any special portion of capital for covering the liquidity risk. The Group solely uses stress test analyses, contingency plans and other risk management measures

to mitigate the risk. Further, it considers a strong capital position to be a prerequisite for the strong liquidity position. Based on these statements it can be concluded that the liquidity risk is not considered to be such a key risk that would require capital allocation but rather a risk that can reliably and cost effectively be managed with the established risk management techniques.

### 8.3.2 Liquidity Position

According to the Management's Report of the Group (Danske Bank 2014, 53-54), the liquidity position of the Group is strong with the liquidity buffer of EUR 60,6 Billion. The LCR of 127% fulfils the requirements. Also, the other liquidity requirements are fulfilled.

Table 4. Liquidity Buffer on the 31st of December 2013 without Regulatory or Internal Haircuts (EUR Billion; ECB Exchange Rate on the 31st of December 2013: 1 EUR=7,4593 DKK) (Danske Bank 2014a, 79.)

Cash and holdings at central banks	4,42
Securities issued or guaranteed by sovereigns, central banks or multilateral development banks	14,75
Covered bonds (including mortgage bonds)	37,54
Other	3,89
<b>Total</b>	<b>60,60</b>

According to Danske Bank Group, there is an uncertainty concerning the forthcoming LCR introduced in the CRD IV/CRR package whether some types of assets (covered bonds and Danish mortgage bonds) considered to be highly liquid in 2013 on the basis of the legislation of the time will be eligible as level I liquid assets. Also, in 2013 it was still uncertain how the EBA would undertake a calibration of net cash outflows. Furthermore, according to the Group, the application of the NSFR will oblige the banks to increase their long-term funding in the future. (Danske Bank 2014a, 83.)

According to the Risk Management 2013 report (Danske Bank 2014a, 83), the Danish Financial Business Act (885/2011, Section 152) sets the liquidity limits for the Group. The liquidity buffer of a credit institution shall be equal to or more than: 15% of the debt obligations that, regardless of any disbursement conditions, the institution must pay on demand or at less than one month notice (a), and 10 % of the institution's total debt and guarantee obligations, excluding subordinated loan capital infusions that can be counted as part of the capital base (b).



In addition, the Danish FSA has enacted a special liquidity and funding benchmark for a parent company (Danske Bank A/S). The parent company's liquidity should be 50% above the statutory requirements mentioned in the previous paragraph. In 2013, the excess liquidity coverage ratios of Danske Bank A/S were 194% (a) and 198% (b) above the statutory requirements.

The Danish FSA's benchmark for funding stipulates that the lending may not exceed stable funding. The funding ratio shall be less than 1. The funding ratio of Danske Bank A/S was 0,61 at the end of 2013.

According to the Management's Report (Danske Bank 2014, 53), the Group also ensures that the level of funding is prudent. The Group uses stress tests to make sure that it has a sufficient funding base (liquidity buffer) for covering a survival period longer than 12 months.

As mentioned in the Risk Management 2013 report (Danske Bank 2014a, 81), the Group had at its disposal e.g. wholesale funding amounting to EUR 42,77 Billion with a maturity of 0-1 month, EUR 6,84 Billion with a maturity of 1-3 months and EUR 12,07 Billion with a maturity of more than 5 years (together with other maturities EUR 98,80 Billion) at the end of 2013.

## 8.4 Conclusion of Liquidity and Funding Position Analysis

Table 5. Conclusion of Liquidity and Funding Position Analysis

31 December 2013	Balance Sheet Total (EUR Billion)	Liquidity Buffer (EUR Billion)	Short-term Liquidity				Long-term Funding			Liquidity Risk Management	
			Limits	Position	LCR	Control and Measures	Limits	Position	Control and Measures	Documents	Responsibility
<b>OP-Pohjola Group</b>	100.98	12.3	30 days	Strong, primary liquidity buffer for covering the period longer than 30 days (which is the limit)	The LCR will be gradually reported starting from 2015	Liquidity buffer, stress tests, net cash flows by maturity, rating	>12 months	Strong, access to funding good, ability to pay for 24 months (limit 12 months), limits for maturing net cash flows not exceeded in any maturity period	Loan-to-deposit ratio, net cash flows by maturity, sufficient level of funding, liquidity buffer, stress tests, rating, diversification of funding	Funding plan, contingency funding plan, liquidity risk management principles	OP-Pohjola Group (general framework for liquidity and funding risk management), Pohjola Bank (central role for the Group's liquidity management), Group Treasury for maintaining sufficient amount of liquidity and funding
<b>Nordea Group</b>	630.43	84.40	30 days	Short-term liquidity risk was moderate, funding gap risk EUR 16.8 Billion (covered by the liquidity buffer), survival horizon EUR 58 Billion	117%, calculated in accordance with the Swedish rules	Funding gap risk (maximum liquidity need during the next 30 days), liquidity buffer, survival horizon (the excess of liquidity after 30 days without access to market sources), revealing transparent information on liquidity position, cash flow by maturity, stress testing	>12 months	MBSE EUR 49.2 Billion (positive value, meeting the target)	Net Balance of Stable Funding with maturities over 12 months (stable liabilities minus stable assets = positive value), cash flows by maturity, revealing transparent information on liquidity position, stress testing	Business continuity plan for liquidity management, liquidity management and strategy	Group Board of Directors (sets the risk appetite and the limits) and the Risk Committee, Group Treasury (in charge of implementing liquidity strategy, risk management, maintaining sufficient amount of liquidity and funding)
<b>Danske Bank Group</b>	432.62	60.60	Minimum liquidity buffer determined by the LCR, minimum of 110%, minimal survival horizon of 30 days and stress testing	Liquidity position of the Group is strong, LCR and other liquidity requirements fulfilled, liquidity excess of the parent company 194% and 198% over the statutory requirements	127% (not CRD/UCRR compliant)	Survival horizon, stress testing, strong position in Danish kroner for offsetting deficiencies in other currencies, rating, strong capital position	>12 months	Group's level of funding on prudent basis, funding ratio of the parent company (lending/stable funding) 0.61 (less than 1, meeting the target)	Funding ratio, diversification of funding, stress testing, following maturities of long-term funding, liquidity buffer to certain extent, rating, strong capital position	Liquidity policy and risk appetite, liquidity instructions, contingency plan	Group Board of Directors determines the liquidity risk appetite as well as the limits and the way of calculation, Group Liquidity Risk Committee (monitoring the liquidity and funding risk profile and management), Group Treasury (maintaining sufficient levels of liquidity and funding)

## 9 Conclusion

In this chapter, the main results of the research are summarized. The chapter contains a conclusion of the theoretical background concerning the financial regulation and supervision as well as the main results of the empirical research based on the sample companies. In addition, the chapter contains proposals concerning a possible further research.

### 9.1 Financial Regulation and Supervision

In order to analyze the liquidity and funding positions of the major banks operating on the Finnish market it was necessary to take under scrutiny the related legislation and the supervision of the financial markets.

In the European Union as well as globally, the consolidation of financial regulation and supervision is considered to be very important, especially in the aftermath of the global financial crisis. It is essential that the stability of the financial markets will not be disturbed by a recurrence of such a severe crisis as the most recent one.

Prudent liquidity risk management is, together with capital adequacy, important for the stability of the financial sector. This paper concentrates on the regulatory background of the liquidity risk management as well as on the liquidity risk management practices in the banking sector.

The Basel Committee on Banking Supervision functioning within the Bank for International Settlements is the regulating body with the global responsibility for the banking sector. The Committee is the originator of the Basel accords which are the basis for national and supranational legislation. The Basel III accord issued in 2010 and adjusted in 2013 is the newest rule book and at the moment, it is being implemented across the world.

In the European Union, the CRD IV/CRR legislative package based on the Basel III accord was approved in 2013 and is gradually entering into force. There is a road map for the application of the package in the European Union. However, the final date for all parts has not yet been defined (especially concerning the NSFR). During the transitional period, the legislation based on the Basel II accord is partly valid.

The new legislation strengthens the rights and responsibilities of the supervisory authorities in the European Union. The European Banking Authority is responsible for the supervision and for the harmonizing of the legislation (European Single Rulebook) in the European banking sector in cooperation with the national supervisory authorities (e.g. FIN-FSA in Finland). As a regulator, of course, it just complements work of the actual legislative bodies of the EU (the

Parliament, the Commission and the Council) as well as of the member states. In addition, the European Central Bank will attain certain supervisory responsibilities concerning large financial institutions within the Single Supervisory Mechanism in the Autumn 2014.

Regarding the liquidity risk, the main difference between the Basel II and the new Basel III requirements is the inclusion of liquidity risk under Pillar I in the Basel III. The banks have to comply with the detailed regulatory requirements demanding an adequate liquidity coverage (LCR and NSFR). This was not the case under the Basel II according to which the banks just needed to address liquidity risk under Pillar II, i.e. they had more freedom in this respect. All in all, the legislation based on the Basel III accord means the tightening of liquidity requirements and may cause the banks challenges with respect to their liquidity position (depending on e.g. the inclusion of certain types of assets in the calculation of the liquidity ratios), to their profitability, to the access to and the cost increase of funding as well as to distortion of competition.

## **9.2 Liquidity and Funding on the Finnish Banking Market**

The objective of this paper was to analyze the liquidity and funding positions of three major banks operating on the Finnish market and to explore what the liquidity situation on the Finnish banking market is.

Based on the data provided by the sample companies (OP-Pohjola Group, Nordea Group and Danske Bank Group) operating on the Finnish market, their liquidity and funding positions are strong. Based on the research results, neither liquidity nor funding problems were found.

The sample is representative, the analyzed companies' market share of public loans and deposits was 74,3% and respectively 78,8% in 2012. Due to this, in the light of Basel II based regulation, it can be concluded that there are no liquidity and funding problems on the Finnish banking market as a whole.

The research was conducted by using the financial statements and some other publications of the companies introducing their situation on a consolidated basis at the end of 2013. The financial results presented in these documents comply with the Basel II requirements (the Basel III requirements were not in force in 2013).

Albeit the analyzed companies also provide e.g. insurance or capital management services, their main activity is banking. The analysis of the liquidity position of the companies was conducted from the viewpoint of their main activity.

The sample companies present information on their liquidity and funding risk management as well as on their short-term and long-term liquidity position mainly in qualitative form and descriptively. It was rather challenging to find and to select data that would be common for these three institutions and that would be sufficient for a representative analysis. Even when the character and the type of information provided by the companies differ, it was possible to collect enough suitable data for the analysis.

The results of the research are presented in the Chapter 8 and summarised in the Table 5 (Chapter 8.4). The first column of the Table shows the balance sheet totals of the sample companies, describing the scale of each company's operations. This makes it possible to compare the quantitative data regarding liquidity position of the companies as well, e.g. the amounts of the liquidity buffer.

Further, information on short-term liquidity and long-term funding as well as on liquidity risk management is presented in the Chapter 8 and in the Table 5.

It can be seen that the methods and the ways how the sample companies deal with the short-term and long-term liquidity risk are similar. The measured periods are identical (30 days limit/>12 months) and time-wise they also correspond with the CRD IV/CRR requirements (LCR and NSFR).

As for the short-term liquidity calculation, Nordea Group and Danske Bank Group use the LCR ratios, but OP-Pohjola Group does not<sup>16</sup>. However, the LCRs Nordea Group and Danske Bank Group have used for their calculations in 2013 are not fully compliant with the CRD IV/CRR requirements. They are based on the national legislation valid in Sweden and Denmark in 2013. The Swedish LCR ratio is based on the rules that are expected to be adopted under the Basel III framework, and will be subject to adjustments in order to ensure consistency with the relevant EU legislation when it enters into force. The Danish LCR ratio, in turn, is based on the Danish national legislation of 2011 having no direct connection to the Basel III regulation. With respect to both of the above mentioned Nordic LCR ratios, especially the inclusion of certain types of currently acceptable assets in the forthcoming CRD IV/CRR based LCR ratio is questionable. Nevertheless, the transitional period (full compliance with the LCR requirements in January 2019, further adjusting of the NSFR requirements by the BCBS in 2017) should give enough time for the banks to get prepared for these requirements.

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<sup>16</sup> According to the Finnish regulation valid in 2013 (CIA 121/2007 and the FIN-FSA Standard 4.4d), no quantitative requirements have been set for the Finnish banks concerning liquidity adequacy calculations.

As the Table 5 shows, the most important methods the sample companies use in order to cope with liquidity and funding risks are: liquidity buffers<sup>17</sup>; stress tests; the monitoring of net cash flows by maturity; ratings; currency policies; survival horizons; the building of trust by disclosing all relevant information; the keeping of sufficient level of long-term liabilities in order to fund stable assets as well as the diversification of funding e.g. by product, currency, maturity and counterparty. Absence of some of the referred methods in the text/part of the table concerning a particular sample company does not necessarily mean that the company in question does not use these methods at all, only that the methods mentioned in the sample companies' publications can be assumed to be the most essential ones for the particular company and that is why they are presented.

Also, the organization of the companies' liquidity risk management comprising among the other things the setting of liquidity policy, strategy and targets as well as the division of organizational responsibilities are similar. As regards the organizational responsibilities, the Board of Directors with help of relevant committees defines the main principles and the risk appetite as well as the structure of liquidity risk management. Risk management function supports the Board in monitoring the efficiency of the risk management, including liquidity risk management, of the company as well as helps the organization to cope with the daily risk management measures. Treasury is a function that usually has responsibility to conduct the actual risk management measures with respect to liquidity and funding.

As regards the results of the Internal Capital Adequacy Assessment Processes of the sample companies, it can be concluded that the companies do not have a need to allocate any capital especially for the liquidity risk. Rather, the companies find the established risk management measures sufficient for adequate mitigating of this risk. However, the particular ICAAP process of each company and its detailed results are not disclosed and this, in turn, means that it is not possible to analyze how the companies have come to such conclusion and what the specific risk management measures in use are. The process and its results are mainly tools for the companies as well as for the supervisory authorities to deepen their overall view of the companies' risks and capital adequacy rather than tools for strengthening the public trust to the companies. The new CRD IV/CRR requirements are not expected to alter this starting point. The forthcoming rules, however, oblige the companies to calculate ratios (LCR, NSFR) opening their liquidity position as well as to report the results of the calculations in a unified way

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<sup>17</sup> The liquidity buffer as a measure is usually applied in order to cover the short-term liquidity risk. However, the use of this measure is ambiguous. E.g. OP-Pohjola distinguishes between primary liquidity buffer (covering the short-term liquidity risk) and liquidity buffer (covering also the funding risk). Also, Danske Bank Group covers with its liquidity buffer the survival period longer than 12 months.

under Pillars I and III. This means certain enhancement with respect to transparency, even though a view based solely on the regulatory requirements is naturally limited when compared to the companies' Pillar II based economic capital projections.

### **9.3 Final Remarks and Future Prospects**

The material for this research has been collected and elaborated for about 10 months. Due to continuous changes in the legislation, some data and facts in this paper may be obsolete at the time of publishing, even though, as a principle, the most actual available data has been used as source data. This, however, should not reduce the value of the paper due to the fact that it aims to provide the reader with an overall picture on the topic, i.e. liquidity and funding risks and their management both from the theoretical and the empirical point of view, and the transition from Basel II to Basel III environment does not upset the basic elements of them.

The study focuses on the situation in the European Union and the actual research concerns the situation on the Finnish market. The global dimensions are included for a better understanding of the context.

The research is based on the sample companies' own publications. In order to get an in-depth view on e.g. the challenges with the application of the new legislation, it would be interesting to interview the representatives of the sample companies. Additionally, an opinion of the supervisory authority would contribute to higher grade of impartiality of the research results.

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## Attachments

### Attachment 1. Cash Outflows Overview (LCR)

Item	Factor
<b>Retail deposits</b>	
Stable deposits	3-5%
Less stable retail deposits	10%
<b>Unsecured wholesale funding</b>	
Stable deposits (small business customers, maturity < 30 days)	5%
Less stable deposits (small business customers, maturity < 30 days)	10%
Operational deposits generated by clearing, custody and cash management activities	25%
Portion covered by deposit insurance	5%
Cooperative banks in an institutional network (qualifying deposits with the centralized institution)	25%
Non-financial corporates, sovereigns, central banks, multilateral development banks and PSEs	40%
If the entire amount fully covered by deposit insurance scheme	20%
Other legal entity customers	100%
<b>Secured funding</b>	
Secured funding transactions with a central bank counterparty or backed by Level 1 assets with any counterparty	0%
Secured funding transactions backed by Level 2A assets, with any counterparty	15%
Secured funding transactions backed by non-Level 1 or non-Level 2A assets, with domestic sovereigns, multilateral development banks, or domestic PSEs as a counterparty	25%
Backed by RMBS eligible for inclusion in Level 2B	25%
Backed by other Level 2B assets	50%
All other secured funding transactions	100%
<b>Additional requirements</b>	
Liquidity needs (e.g. collateral calls) related to financing transactions, derivatives and other contracts	3 notch downgrade
Market valuation changes on derivatives transactions (largest absolute net 30-day collateral flows realized during the preceding 24 months)	Look back approach
Valuation changes on non-Level 1 posted collateral securing derivatives	20%
Excess collateral held by a bank related to derivative transactions that could contractually be called at any time by its counterparty	100%
Liquidity needs related to collateral contractually due from the reporting bank on derivatives transactions	100%
Increased liquidity needs related to derivative transactions that allow collateral substitution to the non-HQLA assets	100%
ABCP, SIVs, conduits, SPVs, etc.:	

Liabilities from maturing ABCP, SIVs, SPVs, etc. (applied to maturing amounts and returnable assets)	100%
Asset Backed Securities (including covered bonds) applied to maturing amounts	100%
Currently undrawn committed credit and liquidity facilities provided to:	
Retail and small business clients	5%
Non-financial corporates, sovereigns and central banks, multilateral development banks, and PSEs	10% for credit 30% for liquidity
Banks subject to prudential supervision	40%
Other financial institutions (incl. securities firms, insurance companies)	40% for credit 100% for liquidity
Other legal entity customers, credit and liquidity facilities	100%
Other contingent funding liabilities (such as guarantees, letters of credit, revocable credit and liquidity facilities, etc.):	
Trade finance	0-5%
Customer short positions covered by other customers' collateral	50%
Any additional contractual outflows	100%
Net derivative cash outflows	100%
Any other contractual cash outflows	100%
<b>Total cash outflows</b>	

(BCBS 2013b, 67-68.)

## Attachment 2. Cash Inflows Overview (LCR)

Item	Factor
<b>Maturing secured lending transactions backed by the following collateral:</b>	
Level 1 assets	0%
Level 2 assets	15%
Level 2B assets:	
Eligible RMBS	25%
Other assets	50%
Margin lending backed by all other collateral	50%
All other assets	100%
<b>Committed facilities</b>	
Credit or liquidity facilities provided to the reporting bank	0%
Operational deposits held at other financial institutions (incl. deposits held at centralized institution of network of cooperative banks)	0%
<b>Other inflows by counterparty:</b>	
Amounts to be received from retail counterparties	50%
Amounts to be received from non-financial wholesale counterparties, from transactions other than those listed in above inflow categories	50%
Amounts to be received from financial institutions and central banks, from transactions other than those listed in above inflow categories	100%
<b>Net derivative cash inflows</b>	100%
<b>Other contractual cash inflows</b>	National discretion
<b>Total cash inflows</b>	

(BCBS 2013b, 69.)



Attachment 3. NSFR Overview

Available Stable Funding (Sources)		Required Stable Funding (Uses)	
Item	Availability factor	Item	Required factor
<ul style="list-style-type: none"> <li>• Tier 1 and 2 Capital Instruments</li> <li>• Other preferred shares and capital instruments in excess of Tier 2 allowable amount having an effective maturity of one year or greater</li> <li>• Other liabilities with an effective maturity of one year or greater</li> </ul>	100%	<ul style="list-style-type: none"> <li>• Cash</li> <li>• Short-term unsecured actively-traded instruments (&lt; 1 yr)</li> <li>• Securities with exactly offsetting reverse repo</li> <li>• Securities with remaining maturity &lt; 1 year</li> <li>• Non-renewable loans to financials with remaining maturity &lt; 1 year</li> </ul>	0%
Stable deposits of retail and small business customers (non-maturity or residual maturity < 1 year)	90%	Debt issued or guaranteed by sovereigns, central banks, BIS, IMF, EC, non-central government, multilateral development banks with a 0% risk weight under Basel II standardized approach	5%
Less stable deposits of retail and small business customers (non-maturity or residual maturity < 1 year)	80%	Unencumbered non-financial senior unsecured corporate bonds and covered bonds rated at least AA-, and debt that is issued by sovereigns, central banks, and PSEs with a risk-weighting of 20%, maturity ≥ 1 year	20%
Wholesale funding provided by non-financial corporate customers, sovereign central banks, multilateral development banks and PSEs (non-maturity or residual maturity < 1 year)	50%	<ul style="list-style-type: none"> <li>• Unencumbered listed equity securities or non-financial senior unsecured corporate bonds (or covered bonds) rated from A+ to A-, maturity ≥ 1 year</li> <li>• Gold</li> <li>• Loans to non-financial corporate clients, sovereigns, central banks, and PSEs with a maturity &lt; 1 year</li> </ul>	50%

All other liabilities and equity not included above	0%	Unencumbered residential mortgages of any maturity and other unencumbered loans, excluding loans to financial institutions with a remaining maturity of one year or greater that would qualify for the 35% or lower risk weight under Basel II standardized approach for credit risk	65%
		Other loans to retail clients and small businesses having a maturity < 1 year	85%
		All other assets	100%
		Off Balance Sheet Exposures:	
		Undrawn amount of committed credit and liquidity facilities	5%
		Other contingent funding obligations	National supervisory discretion

(BCBS 2010, 46-47.)